JANUARY, 1951

Industrial FINISHING

Published Monthly in the Interest of Product Cleaning and Finishing By Practical Publications, Inc., 1140 N. Meridian Street, Indianapolis 4, Ind.

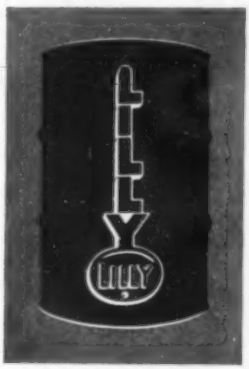
You

CAN'T GO WRONG

. . . if you start the New Year of 1951 by joining the "March of Dimes."

NEITHER CAN YOU GO WRONG

. . . if you start the New Year of 1951 by using Lilly's Dependable Finishes because—"With the Right Finish—You'll Finish Right"



"THE KEY TO THE RIGHT FINISH"

THE Lilly FINISHES VARNISH COMPANY

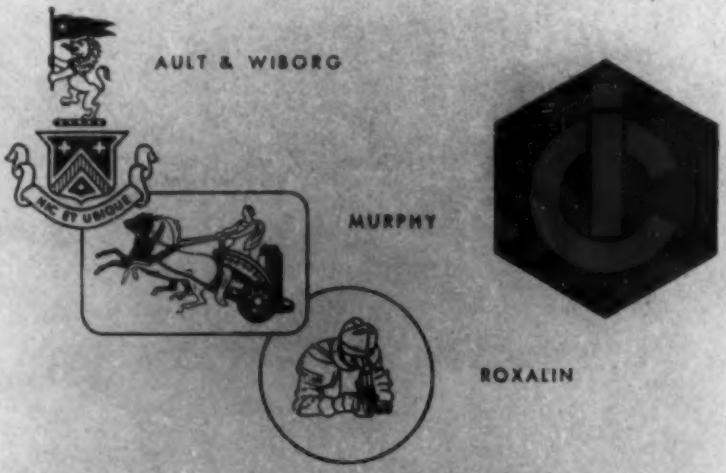
Indianapolis, Indiana • Gardner, Mass.

THE LILLY COMPANY • High Point, N. C.

Interchemical *Finishes*

UNDERCOATS, VARNISHES, LACQUERS,
ENAMELS for METAL, PLASTIC, WOOD

To give your product a good start, give it an Interchemical Finish!



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FACTORIES: ELIZABETH, CINCINNATI, CHICAGO, LOS ANGELES

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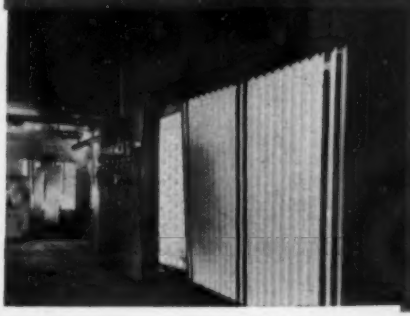
4 HOURS vs. 4 MINUTES



Aluminum Awning Manufacturer

Cuts Paint Drying Time to a Fraction with JENSEN "Dual Heat" Infra-Red Oven

UNUSUAL? No. The experience of the Four-Way Awning Company, Detroit, in stepping up efficiency and reducing costs on finishing operations with Jensen "dual heat" Infra-Red is very typical.

From coast to coast, Jensen "dual heat" Infra-Red is saving finishing money for manufacturers in almost every field of industry.

Now . . . with a buyer's market definitely ahead . . . find out how Jensen can help you cut costs.

Jensen "dual heat" infra-red Ovens are designed to industry's specific needs. Write us about your problem today!

JENSEN Specialties Inc.

America's Foremost Designers and Builders of Infra-Red Ovens • Conveyors • Paint Dip Tanks

9331 FREELAND • DETROIT 28, MICHIGAN, U. S. A.

SERVICE BRANCHES in:

Atlanta, Ga. Chicago Cincinnati Cleveland Columbus, Ohio Detroit Franklin, Mass. Grand Rapids, Mich. Indianapolis Philadelphia Pittsburgh Peoria, Ill. Rockford, Ill. Toledo, Ohio Waterbury, Conn.

In Finishing Production . . . the Future Belongs To Men Who *Plan* For It!

Special Cherry Finish Developed for Ogden's Concord Group

Like a page of history brought to life, this handsome buffet by Ogden reflects the true character of the period in its American Federal design and special Concord Cherry Finish. This finish was created for Ogden in our modern studios and, as always, our experienced finish experts combined in it the beauty and durability that make sales, plus the production economy that makes profits.

The Better the Finish,
the Better the Buy

For further information regarding our studio facilities and service, please write to

GRAND RAPIDS VARNISH CORPORATION
GRAND RAPIDS, MICHIGAN
Makers of the Famous Guardsman Finish
and Guardsman Cleaning Polish

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the 18th of each month by
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Incorporated
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Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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JANUARY, 1951
Vol. XXVII, No. 3

ABC

A monthly magazine for finishing room and paint shop foremen, production superintendents, chemists, purchasing agents and company executives of industrial plants where production cleaning and finishing are major operations in the manufacture of parts and products.

Subscription Rates Per Year
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TWENTY-SEVENTH YEAR OF PUBLICATION

Increased Production. One of the first industries to jump to aid National Defense and also adequately supply industrial plants with equipment is The Material Handling Institute. At a recent annual meeting The Institute revealed that five trade associations in this industry have held joint meetings with Government officials to exchange ideas on industry and Government cooperation.

The companies represented make trucks of all kinds, conveyors, steel strapping and all sorts of material handling equipment. Sales are now almost double the average for 1949, so these companies are beginning an expanded production program with a terrific load. Other industries might follow their lead. Now is the time when we need cooperation.

* * *

Dry Fire Extinguisher. Announcement is made of a new automatic industrial fire protection system employing a dry chemical as its extinguishing agent. The fire is extinguished when the powder is actually in the fire. When heated, the chemical expands hundreds of times and releases air excluding carbon dioxide and heat absorbing water. Its effectiveness in stopping fires is not dissipated before the chemical reaches the fire.

The system is operated by a heat acuated device and is especially useful in spray booths, dip tanks, flow coaters and storage rooms, oil quench tanks, and where flammable liquids and materials are used. Release of the dry chemical is not dependent upon electrical power.

This new agent is a blend of sodium bicarbonate and other chemicals. It is non-corrosive, non-abrasive, nontoxic, a nonconductor of electricity, and does not evaporate or deteriorate.

* * *

Thickness-of-Tin Gauge. A new electronic thickness gauge for the quick, accurate, economical, non-destructive gauging of tin coatings on thin sheet steel and iron has been developed by the Research & Control Instruments Division of North American Philips Co., Mt. Vernon, N. Y., in co-operation with one of the nation's largest steel and tin plate producers.

The unit conserves critical tin by making possible the maintenance of continuous coatings of satisfactory characteristics. It does this without wastage, as the test sheet may be used in the ultimate product. It permits close quality control more speedily and more accurately than conventional chemical methods, and with considerable savings in time.

* * *

Heavy Duty Tumbler Switches. A newly designed Heavy Duty Factory Sealed Tumbler Switch in adjustable flush mounting, explosionproof enclosure, is now being manufactured by Russell & Stoll Co., Inc., 125 Barclay St., New York 7, N. Y. The entire

. . . from the **start** . . . consider the **finish** . . .

as the solids go UP . . .

NO preheating thinning

IF you use

your cost goes DOWN

DOLAN'S

35% HI-SOLIDS LACQUER

of "Unquestionable Quality"

Your finish will be richer looking, longer lasting

V. J. DOLAN & COMPANY, Inc.

INDUSTRIAL FINISHES

1830 N. Laramie Ave. Chicago 39, Ill.

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Industry's 3 Newest

COLD STRIPPERS

Fast! Economical! Safe! New!

"UNISOL"—for removing all baked enamels! Used cold—Non-inflammable—Non toxic—Strips baked enamels in seconds—Used for all type metals—Requires no rinse—Non-injurious to hands or clothing.

"UNISOL No. 2"—A new cold stripper for japans and vinyls—Non-inflammable—Strips tough japans and vinyls in matter of minutes—Used for all type metals.

"STRIPPER 202"—Something new for removing "stop-off" lacquers in seconds—Will not tarnish highly polished metal surfaces—Non-inflammable—Used cold—Non toxic.

Samples and further information supplied on request.

PELRON CORPORATION

(Formerly Chemco Products Co., Inc.)

7740 WEST 47TH STREET **LYONS, ILLINOIS**

Form-A-Roc • *FIRST COAT*

FOUNDATION FOR FINE FINISH

1. Dries with lacquer speed.
2. Has double lacquer solids at spray gun.
3. Fills very well—sands easily.
4. Adheres tenaciously to steel, wood, presdwood, aluminum, galvanized metal, etc.
5. Holds out lacquer, synthetic or oleoresinous enamels exceptionally well.
6. Thins 3:1 with xylol.
7. Available in GREY, SALMON and OFF-WHITE.
8. Ground well to smooth texture.

MADE BY

THE VARNISH PRODUCTS COMPANY

5206 Harvard Avenue **Cleveland, Ohio**

line has been designed to meet all underwriters' requirements for Class I, Groups C and D classifications. Available in one and 2-pole, three and four way. Write for literature TS-P35.

* * *

Cold Galvanizing. A new method of cold galvanizing for surface protection of steel and iron is announced by the Chase Chemical Corp., 40 W. 29th St., New York 1, N. Y. It is claimed that extensive testing over a two-year period has proved that the process, which utilizes Zinkrich Cold Galvanizing Compound, is really effective.

Zinkrich, when applied to steel or iron surfaces, creates an electro-chemical union, thus allowing zinc to become galvanized to the base metal's surface. It is applied with an ordinary paint brush, spray gun or cold dip.

* * *

What's in House Paint. Final 1949 statistics recently released by the Bureau of Mines reveal that, for the first time in history, the tonnage of zinc oxide sold for use in paint exceeded that of white lead, dry and in oil. As both of those pigments are used principally in outside house paints, together with smaller quantities of titanium dioxide, it can now be said, on the basis of those statistics, that zinc oxide is the most-used opacifying pigment for exterior painting.

* * *

New Watch Designs. The Elgin National Watch Co. is turning to freelance designers, some of them amateurs, for a fresh approach to the problem of developing interesting watch styles. This method has already resulted in several unusual new models, and more are on the way. An advertising artist of Mobile, Ala., with no previous experience in watch de-

(Continued on page 98)

When you use SAF-TE

the NON-BURNING remover

When removing finishes it's smart to call for SAF-TE! This modern paint remover possesses all the desired qualities of a good remover—and it's *also non-inflammable!* Convincing proof of this remover's safety is its official approval as "ships stores" by the U. S. Department of Commerce.

Applied with a brush, SAF-TE penetrates virtually any kind of finish, reducing it to a soft slush easily removed with a putty knife. *And no after-wash is required,* since SAF-TE leaves no waxy residue.

WILSON-IMPERIAL CO.
125 Chestnut St.
Newark 5, N. J.

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125 Chestnut Street, Newark 5, N. J.

We are interested in stripping finishes

from_____

Type of finish_____

Name_____

Company_____

Street_____

City_____ State_____

COMPLET

. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE** to **YOU!**

Illustrated Above is a Tack-Off Booth at the entrance to a Two-Tone and repair Finish Coat Spray Booth. Filtered Air is supplied to this Tack-Off Booth and is maintained at slightly higher pressure to exclude factory dust from settling on bodies after Tack-Rag operation. This equipment is part of a complete Mahon Automobile Body Finishing System.

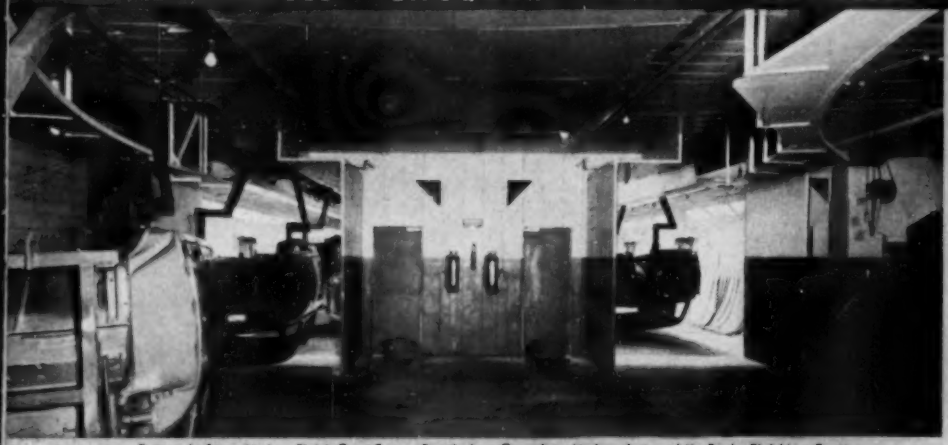
M

E

Finishing

SYSTEMS

... for ENAMELS • LACQUER • PAINT • VARNISH



Exit end of two Mahon Finish Coat Spray Booths in a Complete Mahon Automobile Body Finishing System.

MODERN FINISHING EQUIPMENT Simplifies Production, Provides Better Working Conditions, Reduces Cost, Ups Quality!

The equipment illustrated on these pages is some of the major units of a Complete Mahon Finishing System specially designed to meet the exacting requirements of a large automobile manufacturer. It is modern in every detail . . . into it has been engineered many new features which reduce maintenance, provide better working conditions, and produce finer finishes at lower cost. These developments are the result of research and experimentation which goes on constantly in Mahon laboratories in the perfection of new methods and better equipment to produce better results in production finishing. No matter what your finishing equipment requirements may be, you can depend on Mahon for modern equipment engineered to do your particular job efficiently and economically. There is no substitute for experience in this highly specialized field. That is why so many manufacturers all over the world pay a little more for modern Mahon equipment . . . they know that in thirty years of pioneering leadership Mahon engineers have accumulated a wealth of technical knowledge and practical know-how not available to them elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File for complete information or write for Catalog A-650.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Dry-Off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Systems, and Drying and Baking Ovens; Core Ovens, Hydro-Foam Dust Collectors, Fog-Filters, and other Units of Special Equipment.

AHON

WE'RE CLOCKWATCHERS AND PROUD OF IT

And it's a good thing we are, for as conditions change, specification finishes demand change too. Here at Egyptian our laboratory staff have been working around the clock to bring our government specification formulas up to date.

Now in this emergency we are ready to serve you; to provide you, with no delay, the maximum in finish performance—better because it is Egyptian.

SYNTHETICS • VARNISHES • LACQUERS • ENAMELS

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Box 444, Newark 1, N. J.

Please forward further information on Egyptian specification finishes.

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FIRM .....

ADDRESS .....

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INDUSTRIAL FINISHES

Lafayette, Ind.

Whatever it is IF IT'S MADE OF *Metal*

you'll FINISH • FASTER • CHEAPER • BETTER

with a Schmieg CENTRI MERGE *planned* FINISHING SYSTEM

FINISHING has a highly important bearing on the sale of your product if APPEARANCE is a factor in its acceptance. Obsolete, inadequate finishing equipment improperly laid out, not only makes for inefficient finishing and consequent poor appearance—it materially adds to manufacturing cost.

Equipment for metal washing, rustproofing, dry-off, spray painting, baking, as developed by Schmieg engineers, is planned precisely for your plant and product—coordinated into a speedy, smooth-flowing production unit that saves time—space—and operating expense. Schmieg has the years of engineering experience, knowledge of modern methods and the facilities for seeing the job through—from initial designs to completed machines, set up and ready to operate in your plant.

Our engineers will be pleased to consult with you in the solution of your problem.

THE best AIR PURGE in CENTRI MERGE

Schmieg INDUSTRIES INC.

Engineers & Manufacturers

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Ease of Operation...

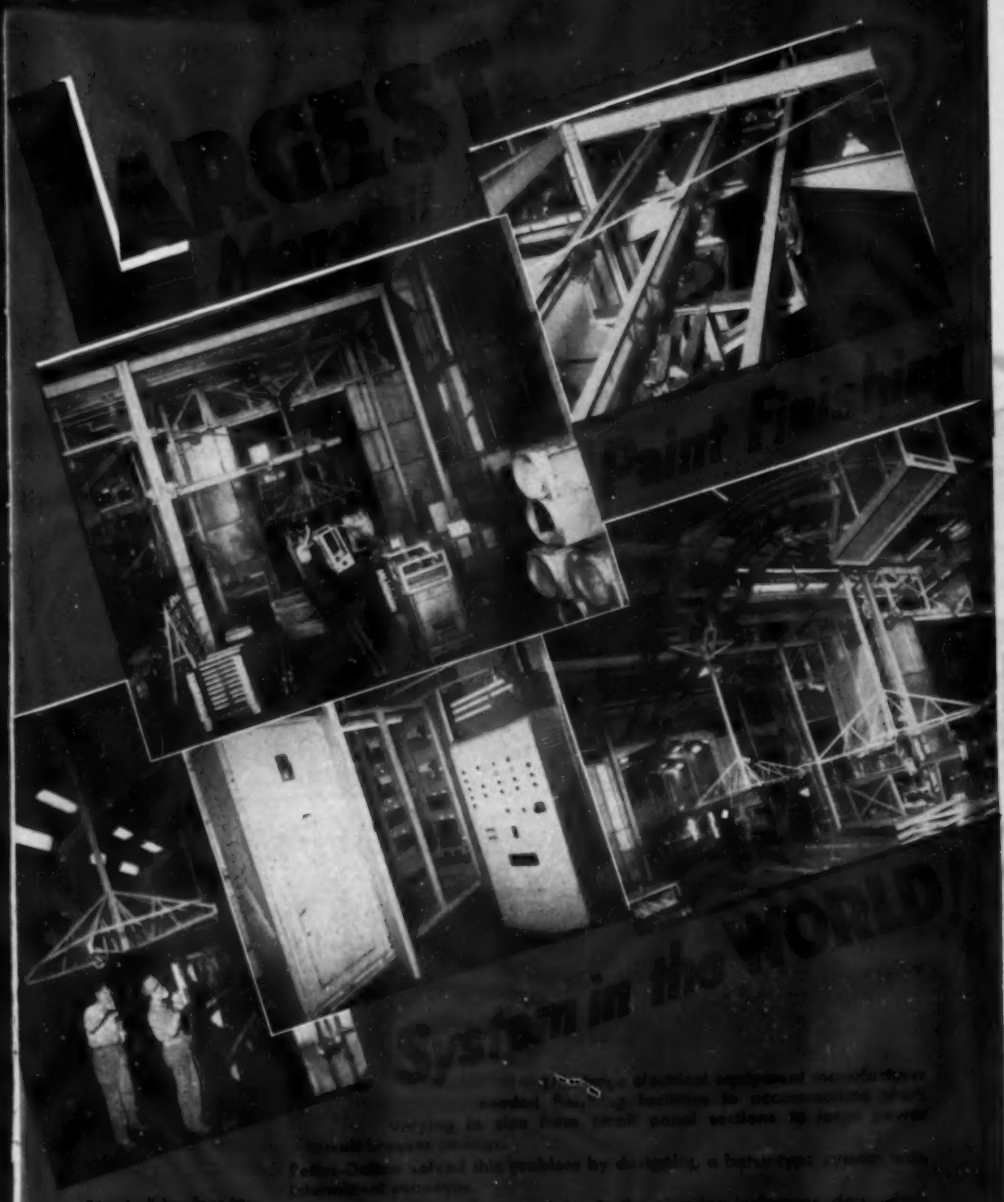
SPEEDS PRODUCTION

"Mity-Midget"
Weighs 4 lbs.
Costs $79.50

Though powerful and fast, National Sanders have a minimum of vibration because of a patented counter-balance system. The Model 400, "Mity-Midget", has a 3/16" orbital stroke at from 5000 to 6000 rpm. Its operation is smooth and effortless with no tendency to dig or gouge. It is light-in-weight...and features a comfortable grip that fits the hand naturally. Your finishing room employees will be able to produce superior work in the shortest possible time with National Sanders. Write for details today.

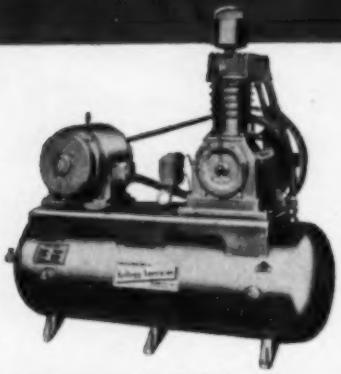
NATIONAL NS SANDERS

NATIONAL AIR SANDER, INC.
2818 AUBURN ST., ROCKFORD, ILLINOIS

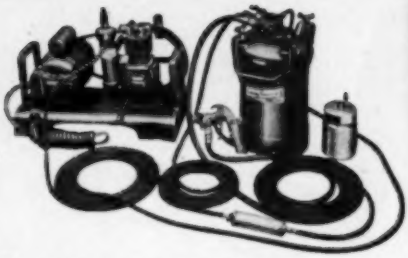


For Finer Finishing Equipment — In Any Industry — It's

PETERS-DALTON *Inc.*



1. Air compressors for all applications.



2. Complete spray painting outfits for all applications.

5. Dry-type spray booths and all accessories.

6. The Steam-Spray gun and system for high-speed, production-line finishing.

Brake Shoe gives you performance

PRODUCTION

A new answer to high-speed, production-line finishing is the Steam-Spray gun (No. 6 above). This gun was developed for use with the revolutionary du Pont steam spraying process. It enables you to use superheated steam in place of air to apply materials of higher viscosity in thicker films with one pass of the gun. You get coats surprisingly free from sags, popping and runs. You reduce the amount of solvents and thinners used. You cut overspray. You cut labor costs. Brake Shoe can supply the gun or a complete steam spraying system, as your requirements dictate.

The Micro-Spray gun (No. 3) atomizes paint exceptionally fine and distributes it exceptionally evenly, resulting in an extra-smooth, high-gloss finish of above average quality.

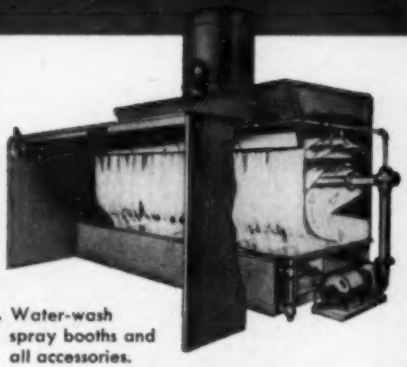
Over 100 air compressor models (No. 1) offer a range of choice that will provide the answer to your "on the spot" air problems.

Assembly-line spraying and other finishing operations are cleaner and

KELLOGG DIVISION, 93 HUMBOLDT ST., ROCHESTER 9, NEW YORK

AMERICAN **Brake Shoe** COMPANY

3. The Micro-Spray, for extra fine quality finishing, and other spray guns.



4. Water-wash spray booths and all accessories.

7. A complete line of air control units, filters, hose and hose fittings, couplings, and other accessory items.

8. Special-purpose spray guns and outfits for heavy viscous materials.

features that are

ADVANTAGES

safer in the correct model of dry-type or water-wash spray booth from Brake Shoe's complete line (Nos. 4 and 5). Brake Shoe will build special booths any size to suit your particular requirements.

From compressors to Steam-Spray, from spray outfits to Visco-Spray, every product in the Kellogg line helps you solve your difficult finishing problems.

Mail the coupon today for detailed information that may save you hours of time, dollars of cost.

DOMINION BRAKE SHOE COMPANY, NIAGARA FALLS, ONT.

American Brake Shoe Co., Kellogg Division
94 Humboldt Street, Rochester 9, New York

Gentlemen:

Please send me detailed information on:

- ☐ Micro-Spray
- ☐ Steam-Spray
- ☐ Other Spray Guns
- ☐ Air Compressors
- ☐ Dry-Type Booths
- ☐ Water-Wash Booths
- ☐ Spray painting outfits

NAME.....

FIRM.....TITLE.....

ADDRESS.....

CITY.....STATE.....

PROCESSING COSTS WORRY?

BURDETT "Radiant Heat" GAS SYSTEMS PROVED LOWEST!

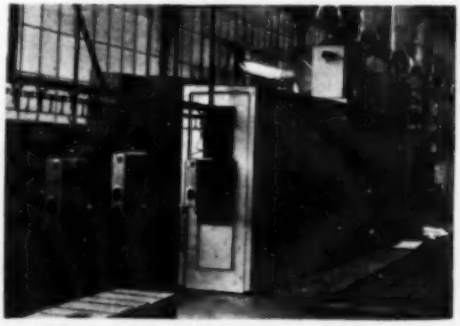
ECONOMY-WISE! Whether it's an entirely new installation or an easy, low-investment modification of your present equipment, a Burdett Gas Combustion System is one good way you can do something about today's rising production costs. It not only can raise your standards of quality and uniformity—it can save you from 30% to 70% in processing time. These accomplishments have been proved on-the-job time and again on many, different products and heating operations. Burdett "Radiant Heat" achieves this record because—

1. Instant Heat Transfer.
2. Deep, Thorough Heat Penetration.
3. Fast Start Operation.
4. Virtual elimination of Fuel Waste —combustion is clean and complete.

PERFECT HEAT SOURCE! For paint, enamel, lacquer drying, flash coat drying, burn-off, degreasing, water dry-off, core baking, soft metal melting, food processing, etc.

ANY HEATING PATTERN! The unusual flexibility of installation permitted by Burdett Gas Systems eliminates costly plant reconstruction. They can be operated in vertical or horizontal position, in any arrangement and spacing to deliver correct, even heat, without hot spots . . . exactly as required. Burdett Gas Systems can be designed for manual, semi-automatic or automatic control.

Do something about the rising cost curve now! Outline your heating requirements and present system—let us give specific suggestions and cost savings possible with a BURDETT "Radiant Heat" GAS SYSTEM.



A typical Burdett Gas System installation in operation at the Metal Specialty Co., Richmond, Indiana, handling the paint-drying operation on a conveyor line of radiators.

BURDETT
MANUFACTURING COMPANY

RADIANT HEAT GAS SYSTEMS

NACROMER is an excellent substitute for Pearl Essence where cost is a factor and where the high brilliance of natural pearl is not necessary.

It is—

- **Stable**
- **INERT**
- **NON-CORROSIVE**

Samples and literature sent on request.

THE MEARL CORPORATION

153 WAVERLY PLACE **NEW YORK, N. Y.**

"World's Largest Producer of Pearl Essence"

THOUSANDS OF PLANTS Switch to MOST EFFICIENT OF ALL

TYPICAL OF THOUSANDS OF FOSTORIA INSTALLATIONS REPLACING FORMER HEATING OR DRYING METHODS

Automatic Burner Corp. of Chicago now finish bakes oil and gas burners with Fostoria Infrared. Here the light weight Fostoria oven is suspended from the ceiling, saving considerable floor space. The conveyorized system saves much handling. 350 units are now turned out in 8 hours compared with 150 units previously, and finishes are more durable and attractive. No heating up time is required — production is instantaneous with complete flexibility of control.

"When you have limited floor space and want to get out maximum production, this is the only efficient way to do it," says H. O. Buschman, Plant Engineer at Perfection Stove Co., Cleveland. The Fostoria oven requires only half the floor space previously needed for a fuel fired oven. A variety of furnace panels, bases, etc. are now finish baked in 6 minutes at the rate of 80 pieces per hour. The flexibility of the Fostoria oven permits switch control of each bank for full or half voltage to vary heat intensity according to production requirements. All handling is eliminated except at inspection and transfer points.

THE FOSTORIA PRESSED STEEL

FOSTORIA INFRA-RED

INDUSTRIAL OVENS FOR FINISH BAKING

Throughout industry, new high standards of production efficiency are being set by the utilization of the Fostoria Infra-red System. Savings in "per piece" production cost are substantial with many additional advantages on both large and small operations. *A Fostoria Evenray System will out-perform any other equipment on the market today.* Fostoria engineering combined with exclusive equipment features guarantee the fastest, finest finish baking in a minimum of space at lowest operating cost. Investigate what Fostoria Infra-red can do for you. Case histories of installations applicable to your production are available on request.

SAVES SPACE
Fostoria Infra-red ovens operate on a comparatively short cycle which results in smaller oven requirements. They may be suspended from ceiling mounts to eliminate floor space entirely.

SAVES TIME
Reduces processing time from hours to minutes because of the inherent speed of Infra-red. There is no time lag in starting an oven. Heat is instantaneous.

SAVES MANPOWER — MANHOURS
Ideal for conveyorized production methods. Reduces expensive product handling. Turns out more pieces per day with ease, with less people.

CUTS COSTS
Faster production, lower operating costs, improved quality, result in lowest "per piece" cost.

★ A Fostoria representative will gladly analyze your production *needs* and submit definite recommendations and carefully forecasted results for your consideration.

Get the **FACTS**

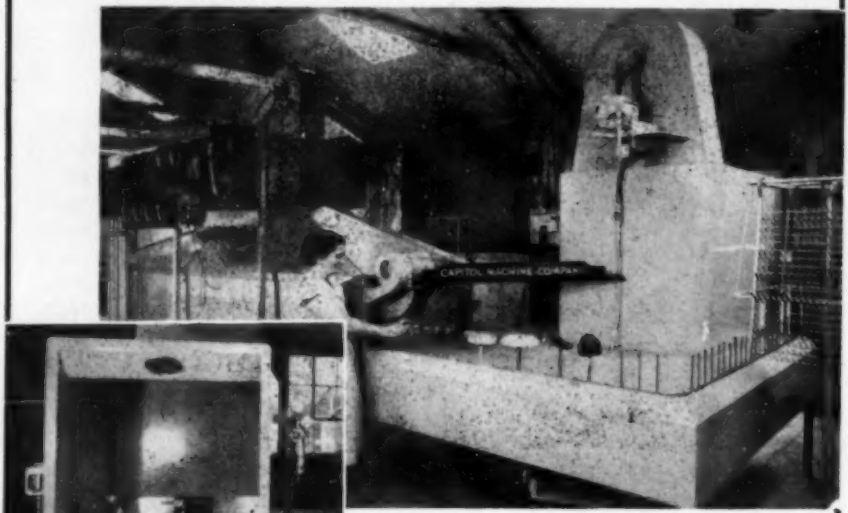
Write, today, for this factual folder on the Fostoria Infra-red System. Technical data applicable to your operations will be included if you send us general facts about your problems.

CORPORATION, Fostoria, Ohio

Oldest and Largest Manufacturers of Industrial Infra-red Ovens

INFRA-RED fostoria SYSTEM

EXCEPTIONAL SAVINGS on finishing costs with Capitol high-speed electric automatic spray-bake equipment. Machine pays for itself in three months.



● Ideally suited for finishing lipsticks, clocks, pens, pencils, door knobs, etc. Approved by New York City Board of Standards and Appeals.

Here's How: Speedy production — Over 200 pieces per minute. Small space required — as little as 6′ x 18′. Quick change adjustments — only 10 minutes! Machine cost recovered in few months by actual case histories. Absolutely uniform quality controls.

Ask Now For: Details on these and other exclusive features. Or better still, bring in or send in your own work samples for test run and estimate. No obligation.

WIRE, PHONE OR WRITE

The CAPITOL MACHINE COMPANY

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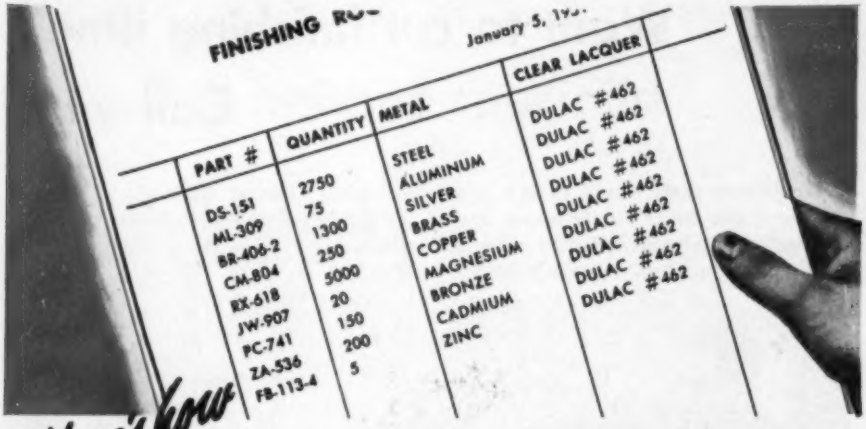

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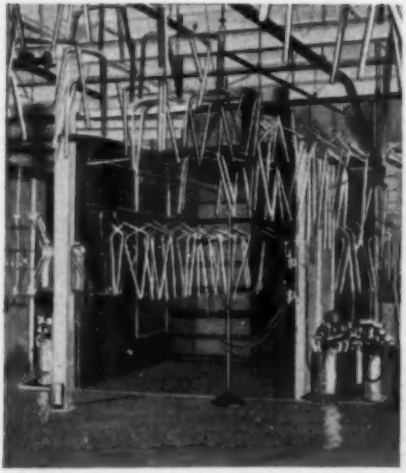

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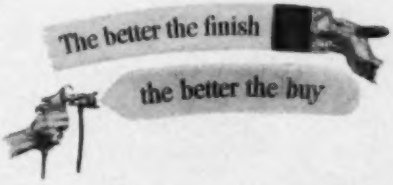

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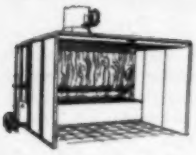

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Finishing

BY GILBERT CLOSE

(PART I, METAL CLEANING)

WHEN WE speak of "military aircraft finishing," we are using a phrase that encroaches on many industrial processes not ordinarily considered within the sphere of conventional industrial finishing practices. In most industries, "finishing" implies the application of a coating material to the completed product, to serve the dual purposes of protection and appearance. In military aircraft production, "finishing" in the above sense is only one of many process controls interwoven throughout production of the airplane. The common end purpose of these process controls, including finishing, is to turn out an airplane that is as nearly corrosion-proof as possible against the multitude of corrosive influences it will encounter during its service life.

In many cases military aircraft finishing, as it pertains to corrosion prevention, involves operations far removed from the paint booths and cleaning tanks. The insulation of dissimilar metal joints during assembly is one illustration. The extreme precautions used to remove all welding fluxes from welded parts is another. Proper heat treating to prevent intergranular corrosion; and the specification of metal working limits to prevent stress corrosion—these are just as important, from the standpoint of corrosion prevention, as is the final coat of paint.

End Result of Processes—Prevention of Corrosion

This mingling of industrial processes to produce the same end result makes it difficult to discuss military aircraft finishing in usual terms. There is no set procedure for finishing the airplane as a component product. Rather, each part of the airplane, even down to the rivets used in the fuselage or hull, must undergo a series of processes, many of them prior to assembly, all aimed to prevent corrosion of the finished product. These pro-

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Illustration on opposite page shows the Navy's AD-Skyraider (carrier-based attack bomber) which carries 12 five-inch rockets and three heavy bombs, rockets or torpedoes. Photograph, courtesy of Douglas Aircraft Co., Inc., El Segundo, California.

Military Aircraft

cesses are not left to the manufacturer's discretion but are specified by the procuring agencies for the various branches of the military. The net result is that all modern airplane plants maintain and use nearly all cleaning and finishing processes known to our industrial science.

Cleaning Must be the Best; Also Surface Preparation

The lesson to be learned from these setups is not one of process application to the product as a whole, but *one of process application to product components during various stages of manufacture to end up with an assembled product that is as nearly corrosion-proof as possible.* This in-built corrosion resistance is something that many other companies could use to the advantage of product quality. It provides a degree of protection over and above any that can be furnished by an exterior coating applied after the product has left the assembly line.

In general, military aircraft finishing divides itself into the three common categories of cleaning, surface preparation, and painting. The difference lies in the manner in which these processes are combined and used to obtain maximum corrosion resistance. The mere fact that a cleaner is "good enough" does not suffice. It must be the best cleaner for that particular application that is available.

When the best paint obtainable is used, its quality is further enhanced by proper storage and mixing prior to its use. When a surface etch is required, the etchant must remove just the right amount of metal to conform with tolerance requirements. Half-way measures are strictly out.

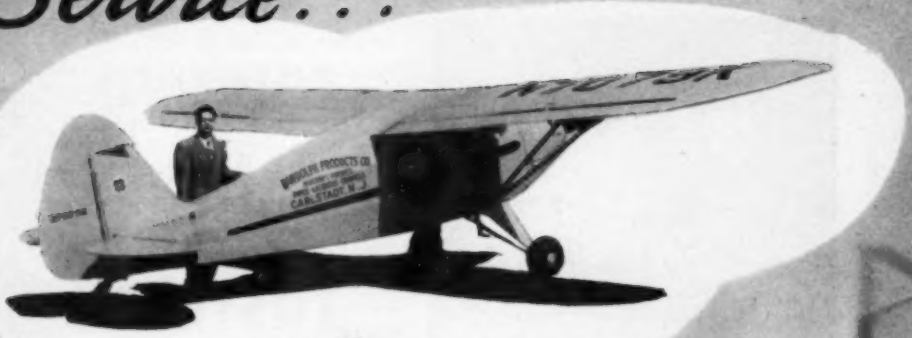
No mediation is used in selecting processes merely to reduce costs or provide simplification. There is too much at stake when a military pilot noses into a 10,000-ft. power dive or finds himself embroiled in a melee with enemy airplanes. Failure of any one of a thousand parts at such an instant, due to some slight corrosion eating away the small in-built margin of safety, might cost a million-dollar airplane and the lives of its crew.

Prevent Corrosion Before, During and After Assembly

The purpose of this series of articles is to describe the various finishing processes used in military aircraft production, their relation with each other, and how they are used througout production phases of manufacture to maintain and preserve the original quality of the materials employed. Some of these processes have already been applied to purchased parts; others are used on raw material or parts when first received; still others are employed during production to prevent in-process corrosion, or to protect areas that are not accessible following partial or complete assembly. To begin with, we'll discuss the various cleaning process and how, when and where they are applied to obtain best results.

As already pointed out, the prime function of military airplane finishing operations—that is, anodizing, chromatizing, phosphatizing, electroplating, painting or lacquering—is for protection against corro-

Service...



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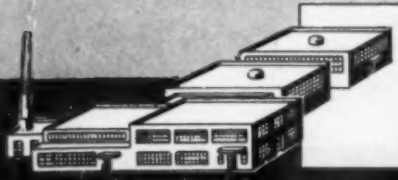

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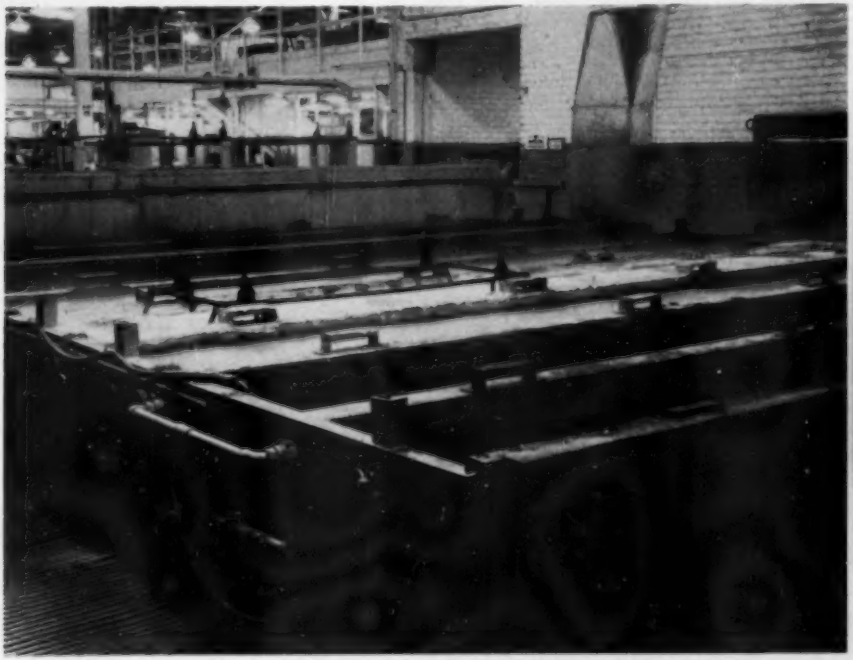
sion. Appearance is of secondary importance. The success of each of these processes depends to a large extent upon proper cleaning of the metal before finishing.

It should be recalled that aircraft structual materials are made up of a preponderance of lightweight and chemically reactive metals. Alkaline cleaning solutions which are entirely satisfactory for steel may attack aluminum alloys severely. Obviously, also, the softer metals will not stand the rough tumbling or "rattling" which is often used on harder materials. These physical and chemical characteristics add substantially to the cleaning problems involved.

Hand Wiping Surfaces With Solvent or Thinner

Hand-wiping with rags wet with solvents or thinners is one of the oldest cleaning methods used in the aircraft industry; it originated at a time when airplanes were practically hand built. Hand-wiping is still used extensively in prototype development where neither production schedules nor the number of parts involved justify specialized cleaning installations. It is used also in certain field modification work where other types of cleaning equipment are not available.

The object is to keep all parts clean during such work so that in-



General view of anodic department in El Segundo, Calif. plant of Douglas Aircraft Co. Cleaning and rinse tanks are air-agitated to obtain quick, efficient cleaning action.

process corrosion will not occur. In prototype models which will be used in crucial test work, thus providing the model for many airplanes to follow, maintenance of the ultimate strength of each part is extremely important. Thus hand-wiping, despite its antiquity, serves a useful and constructive purpose in at least one phase of military aircraft production. Its application is general wherever mechanized cleaning operations cannot be used.

Blast Cleaning Steel Castings

Sandblasting [or blast cleaning] is used to some extent in aircraft production, though its employment is strictly controlled. A major use is to remove scale from heat-treated steel. In some cases, it is used to provide a slightly rough surface for electroplating or painting, but only under conditions where its limitations are not a serious obstacle.

Aside from cost of the process, due to excessive power consumption, sandblasting cannot be used on close-tolerance parts due to loss of dimension, nor on highly stressed parts where the surface roughness may increase the danger of localized stress concentrations. Neither is it used on thin metal parts where cold working of the metal caused by the peening action of sand particles will result in increased hardness and brittleness. Any indication of warpage caused by sandblasting is cause for rejection of the process for that particular part. In general, sandblasting is confined to the cleaning of hard metals of heavy section where a severely abrasive action is needed to remove surface impurities.

Spar cap for airplane wing emerging from an automatic sandblasting machine. Blasting, where it can be used, produces a clean surface, well keyed for bonding.

Tumbling Smooths and Cleans Small Castings

Tumbling is gradually gaining preference over sandblasting in the cleaning and deburring of small but critical parts. Steel, brass and bronze castings are often cleaned in this manner. Metal slugs, jacks, carborundum, ground slag, and other miscellaneous abrasive material are used as the cleaning agent. In highly critical work, the tumbling barrel is almost filled so that only slight movement occurs during each revolution. Tumbling with free movement (often referred to as "rolling") may result in loss of too much material.

Tumbling is often used as an in-production cleaning process to prepare the parts for the next manufacturing operation. It may be used to clean and de-burr slugs that will be subsequently extruded into aluminum tubing. It is used also, along with an emulsion degreasing sol-

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vent in the barrel, for de-burring and de-greasing various small parts after machine operations. When parts of critical dimension are involved, the tumbling barrel speed is kept low, usually between 20 and 40 revolutions a minute.

Burnishing Similar to Wet Tumbling

Burnishing belongs in the same category as tumbling, and is sometimes employed with small precision parts to clean them and give them a polished appearance in the same operation. The rubbing action of the steel balls as they pass over the parts is enough to peen out microscopic surface irregularities, while at the same time not affecting dimensions to any practical extent.

Water and a lubricant is generally used along with the steel balls in the burnishing barrel. The lubricant may be in the form of a soap, with specialized burnishing soaps giving best results. The burnishing balls must be kept clean and bright at all times to prevent them from "gumming" together and doing inferior work. When parts are very dirty, or coated with heavy grease, it is best to pre-clean them to avoid contamination of the burnishing solution.

Steam Vapor Cleaning Has Many Uses

Steam vapor cleaning, while employed to a limited extent in the aircraft industry, is used more in maintenance than in actual production work. With the proper steam cleaning compound, this process serves a useful purpose in cleaning the walls and floors of paint shops and paint booths, cleaning paint from conveyors, from spray booth stacks and windows. It is sometimes used for cleaning the undercarriage of a new airplane that has become soiled during test flying.

A rather unusual use of steam vapor cleaning is the removal of protective coatings, such as Cosmoline or Paralketone, from incoming engines and armament before being installed in the airplane. Another production use, supplementary to aircraft production, is the removal of sand and oil from aluminum foundry castings soon after they are taken out of the casting box. In this type of work, vapor cleaning is more rapid and less costly than sandblasting, and it will not warp or injure the surface of even the lightest materials.

Hot Water Solutions in Still Tanks

The foregoing cleaning methods, taken all together, play but a minor role in the total volume of airplane cleaning. By far the largest volume of cleaning is accomplished in hot water solution still tanks. While mechanical washing machines have replaced the still tank in many industries, the diversity of sizes and shapes of airplane parts, the many components with overlapping sections, and the many rather inaccessible places that must be cleaned, require the dissolving action of the still tank with its hot water solution. Very dirty parts are usually vapor or emulsion degreased prior to solution cleaning to speed the process and to reduce contamination of the cleaning solution.

The all-purpose cleaning setup, though it serves a stalwart purpose in many industries, is not used in

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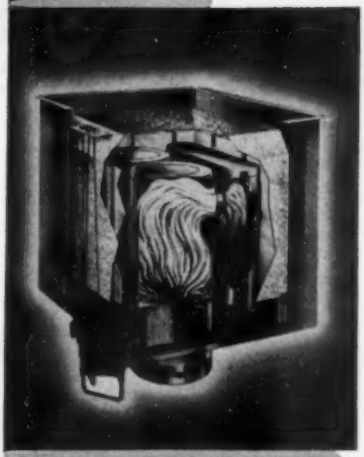

The interior parts of this miniature inferno are SICON-coated.

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major airframe production plants. It has been found far more advantageous to segregate the separate metals and clean each in a separate tank. In an all-purpose setup used in aircraft cleaning, the detergent used would have to be for aluminum, and that would be quite slow on steel parts and not too satisfactory on magnesium or zinc die castings.

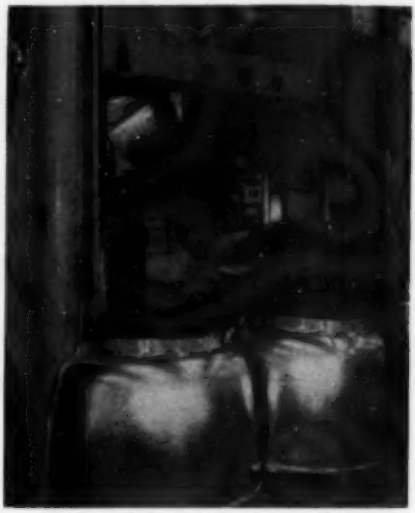
Cleaning Compounds for Steel, Brass and Bronze

Cleaning compounds used on steel parts are generally highly causticized materials, with penetrating powers enhanced either by soaps or a synthetic wetting agent. When only hard water is available, the synthetic agents are usually preferred, as soaps tend to give a sticky deposit which is difficult to rinse away. Cleaners for steel also have buffer salts added to maintain a reserve alkalinity and to stabilize the solutions at a favorable operating alkalinity.

While brass and bronze parts are often cleaned in the steel cleaning solution, immersion time must be carefully controlled. An extended immersion is liable to start a tarnish which must be removed later in a cyanide solution or acid bright dip. When brass and bronze parts are used in volume, a separate cleaning tank is generally employed.

Cleaning, Surface Treatment For Zinc Die Castings

The use of strong alkalies or of a cyanide solution on zinc die castings is not recommended, as these solutions cause the formation of a film of alkaline salts which interfere with subsequent electroplating.



Forming lubricants, used in hammer forming of all parts like these engine cowlings, are tenacious and adhesive, and thorough cleaning must precede any subsequent finishing.

A safe rule with zinc die castings is to avoid using any cleaner that causes discoloration. Nor should cleaners be used after they become heavily contaminated. It is much cheaper to use a fresh solution, than to go through the various processes required to remove a stained alkaline salt film.

When cleaning zinc parts, a careful rinse is required. Alternate hot and cold water is used. The parts should be rinsed in the hot water first, as reduction of temperature will reduce the solubility of the alkaline salts. If the die casting is to be plated, cleaning and rinsing is followed by an acid dip. Generally a 5% to 10% solution of muriatic acid is used, although a 1% solution of hydrofluoric acid will serve just as well. The dip should continue only long enough to start a

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Douglas Skyshark, with turbo prop, dual engine arrangement. A general purpose carrier based attack or ground support airplane. Photograph, courtesy of Douglas Aircraft Co.

vigorous evolution of gas. Surface of the dipped part should be slightly matte. When zinc die castings are to be painted, they are dipped in 5% solution of chromic acid immediately after cleaning.

Aluminum and Magnesium; Tested Materials Demanded

Due to its importance in the airplane's structures, only cleaners specifically intended for aluminum are used to clean this metal. A number of aluminum cleaners are commercially available, and in general these cleaners have been thoroughly tested regarding cleaning power and their ability to accomplish cleaning without harm to the metal. Generally, when selecting an aluminum cleaner for use in aircraft work, efficiency tests are run, using standard laboratory equipment.

These tests include surface tension and interfacial tension measurements alone using the stalagmometer. A titration curve plotted from a glass electrode titration gives information as to the probable life of the cleaning solution under operating conditions, and even its probable free-rinsing characteristics. A high pH glass electrode is available from the manufacturer of the Beckman pH meter, and it should be used, as the older electrodes give false readings in the upper pH range. The titration curve should be relatively flat between the the initial pH and pH 10.5, the approximate lower limit of detergency. Below 10.5 pH the curve should drop steeply, indicating a minimum of inactive alkali to be rinsed away. It has been found that tests of this type give more reliable information than actual working tests under production conditions.

The stronger steel cleaning solutions work much better with magnesium than cleaners intended for aluminum. In fact, these same cleaners would cause aluminum to dissolve. Conversely, neutral or acid compounds which do not affect aluminum may react with magnesium

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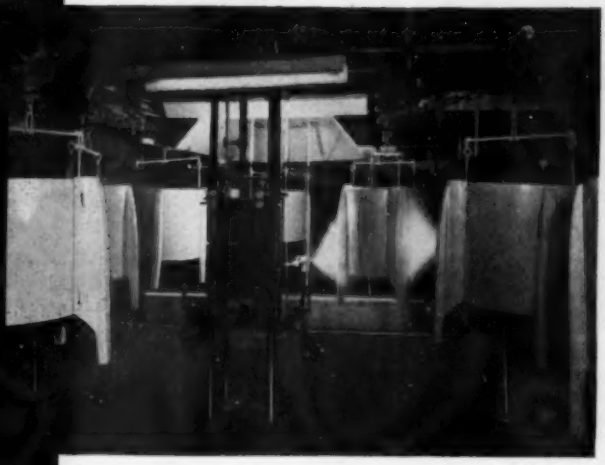

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Removing a basket of magnesium parts from a hydrofluoric acid bath. This bath serves the dual purpose of cleaning and surface treatment. Extreme care is necessary when working with this acid.

with almost explosive violence. In all aircraft work, aluminum and magnesium are carefully segregated prior to cleaning, then each is cleaned in separate cleaning equipment. It is never attempted to use a single cleaning solution for both.

Electro-Cleaning . . .
Emulsion Degreasing

Electrocleaning is employed extensively on airplane parts prior to plating, but as most parts are purchased already plated, actual use of electrocleaning within the aircraft plant is as yet limited. However the merits of the process are well known, and when it is apparent that electrocleaning will be advantageous, its use is specified.

Emulsion degreasing is widely used in military aircraft production, generally as the precleaner prior to electroplating, anodizing, chromatizing, or phosphatizing. It is used also for the decarbonizing of engine parts during overhaul, for paint removing by submersion, and for cleaning runway tar from parts taken from the undercarriage.

In general, emulsion degreasing does not replace hot tank cleaning, but supplements it. It will reduce hot tank cleaning time as much as 75%, and is especially valuable in the deep cleaning of porous metal parts. For aircraft work, emulsion degreasing is not considered to produce a chemically clean surface due to the microscopically thin deposit of oil that will remain on the surface of the part. Degreasing is followed by a rinse, then a short immersion in a hot still tank. The emulsion degreaser with the right cleaning compound will also remove the alloy indentification marks on aluminum sheet stock in about 15 seconds. This same result requires extended time in the hot still tank solutions.

Vapor degreasing, while widely employed, is like emulsion degreasing in that it is considered only as a pre-cleaning process. Vapor degreasing units are installed at various points along the production line, and are frequently used for in-process cleaning to remove compounds or oil and grease that accumulate on the part during various manufacturing operations. Parts that are vapor degreased just prior to painting are usually given a final cleaning in a hot still tank solution. [*To page 42*]

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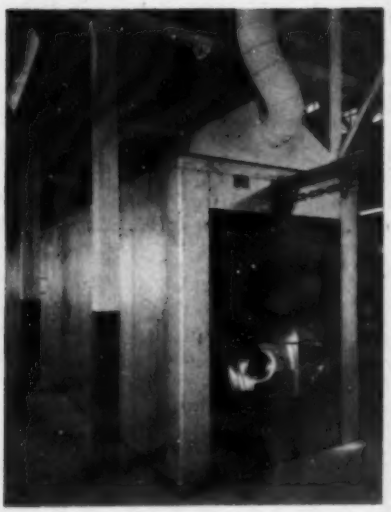

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1126 BUCK STREET **CINCINNATI, OHIO**

Oakite's FREE Booklet on Paint Stripping

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SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in Principal Cities of United States and Canada

Finishing Equipment-Systems
PLANNED, BUILT, INSTALLED
Dip • Flow • Spray
✔ AUTOMATIC
✔ MANUAL
✔ CONVEYORIZED
May we suggest to you low cost top quality production methods?
Morrill and Renshaw Inc.
Finishing-Coating-Spraying Engineers
624 N. GREEN ST.
CHICAGO 22, ILL.
Manufacturers of Baking Ovens, Washing Machines, Spray Booths

It will be noted from what has been stated in this article that the cleaning methods employed in military aircraft production are not unusual. The efficiency required is obtained from careful control to maintain top performance at all times, and careful selection of the cleaning method for each type of job. In fact, one might say that the main difference between airplane cleaning and metal cleaning in general is this job-fitted characteristic.

A specific cleaning method is used for a specific job only when it is the best method available for that job. Furthermore, cleaning is accomplished at various times throughout manufacturing to make sure that inpurities that might cause corrosion are removed before they are sealed in by subsequent assembly.

R. F. Hart, Asst. to President of Standard Varnish Works

Mr. M. H. Corbin, President of Standard Varnish Works, New York, has announced the appointment of Mr. Raymond F. Hart to the position of Assistant to the president.

Mr. Hart has wide experience in the analysis of organizations and methods. His background includes service with private businesses and various government agencies. During World War II he was Chief of The Production Requirements Plan of The War Production Board and later was commissioned a Lieutenant in the Navy, performing the duties of contracting and expediting various phases of naval production.

As assistant to the president of Standard Varnish Works, Mr. Hart's activities will be concerned with both the New York and the Chicago operations of that company.

Brand New!

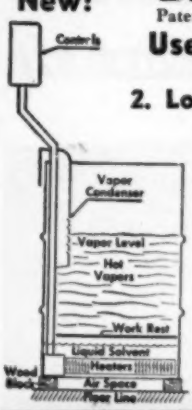
BAR-L Vapor DEGREASER

Patent Pending

Use Your Solvent Drum for a Tank

1. Efficient Cleaning

2. Low Investment 3. No Fire Hazard



HOW A DEGREASER WORKS

Trichlorethylene solvent is heated to a boiling point in the lower section of the drum. Vapors condense on work and wash off oil, grease and dirt. Most parts can be cleaned in less than 60 seconds. Solvent vapors are kept *inside the drum* by a scientifically - designed condenser which returns the solvent to the boiling chamber. REMEMBER: Anything that can fit into a solvent drum can be cleaned in a BAR-L Degreaser! And it's priced right! *Write for complete details.*

Manufacturers Processing Co.

METAL CLEANING CHEMICALS AND EQUIPMENT

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FASTER REFINISHING WITH

ELECTRO COLD STRIPPER

▸ No more long waits while slow-acting paint removers do their work like a team of lumbering oxen. Simply dip the article into Electro Cold Stripper and—Presto!—you can see the old finish literally "pop off" before your eyes. Wash with a pressure stream of water or wipe well with rag and REFINISH IMMEDIATELY. No fuss, no waiting, no bother.

▸ Used cold. Non-inflammable. Non-injurious to hands or metal when used as directed.

▸ Removes paints, enamels, synthetics, lacquers and wrinkles in minutes—not hours. Especially effective on hard-to-remove baked-type finishes. Will not harm even precision finished aluminum, copper, brass, magnesium, zinc, steel, cast iron or their alloys in time required for removal of paint film.

Write for sample and quotations—or order 5 gallons at drum price.

ALLIED FINISHING SPECIALTIES CO.

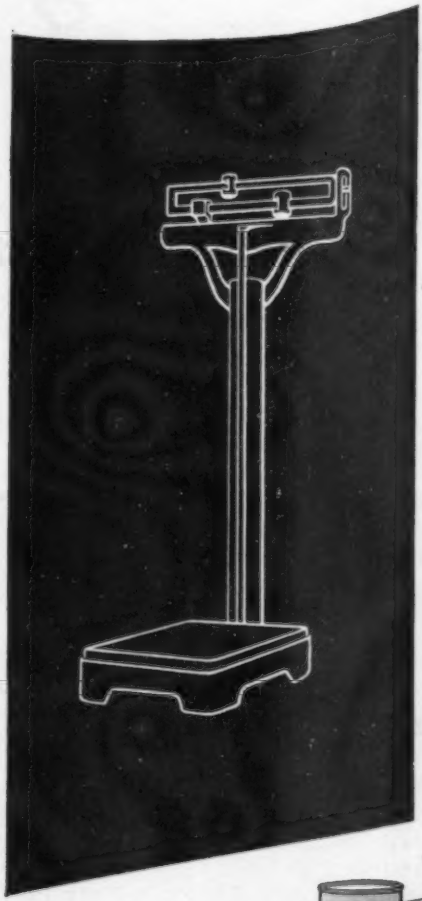
2641 W. GRAND AVE. • CHICAGO 12, ILL.

LOWE BROTHERS
cuts 10 hours off

*The "Finishing Specialist's" up-to-the-minute knowledge of new methods and materials solved the finishing problems of this manufacturer. Materials recommended were Lowe Brothers Nu Spede Primer White and Lowe Brothers Spray-On-Filler. Wherever there are cumbersome castings to be finished, these same materials save both time and money. Among the many product examples are Barber Chairs, Operating Tables, Laboratory and Restaurant Equipment.

"FINISHING SPECIALIST"

manufacturer's finishing time... ave thouand!



This well-known manufacturer of hospital equipment had two big problems in the finishing of large castings: **1.** Each casting required 11 hours' finishing department time. **2.** Oven space was insufficient for speedy production because of baking time required by materials being used. A Lowe Brothers "Finishing Specialist" was quick to recommend that a flash primer* and a spray-on filler* be used. These eliminated the need for a surfacer as well as time-consuming brushing and sanding operations. Separate finishing department operations were cut from 8 to 4! A job that originally took 11 hours per casting was reduced to only 1 hour! *Most important*, the "Finishing Specialist's" suggestions are now saving this manufacturer thousands of dollars a year!

. . . Just one more typical example in the ever-growing number of Lowe Brothers case histories, which prove conclusively that the overall finishing knowledge and experience of Lowe Brothers "Finishing Specialists" are paying off *every day* for manufacturers of all types and sizes. Have a "Finishing Specialist" look into your finishing methods. No cost or obligation. Write today!

INDUSTRIAL DIVISION • THE LOWE BROTHERS COMPANY
DAYTON 2, OHIO

This advertisement is based on facts from Lowe Brothers Industrial Case History Files.

LEADERSHIP THROUGH CONSISTENT SERVICE

Lowe Brothers
FINISHES FOR INDUSTRY

Rotary crossarm with four flow nozzles, as used in the metal cleaning setup. Two of the crossarms, one on each side, operate in each of the five stages of cleaning. They are also used in the prime coating setup.

Whirling in Cleaning

By CHARLES B. LEVINSON
Vice President, The Steelcraft Mfg. Co.

Photographs, courtesy of Spra-Con Company

WE MANUFACTURE steel casement windows, steel door frames, flush-type sliding closet doors and standardized sectional steel buildings—all for the building trades. These products are given a neutral gray primer at our plant. After the building in which they are used is completed, the products we furnish are given intermediate and finish coats to conform with the specified color scheme.

Sometimes weeks and even months may elapse between delivery of these products and their final painting. During this time there is shipping, handling, perhaps temporary storage outside, and construction work. Naturally it is highly important that the metal surfaces be adequately and completely safeguarded so that if the primer is scratched or scraped off in places, rust will not begin its creeping destructive action. The prime coat must have good adhesion and also remain flexible.

Metal Cleaned and Rustproofed By Whirling Flow

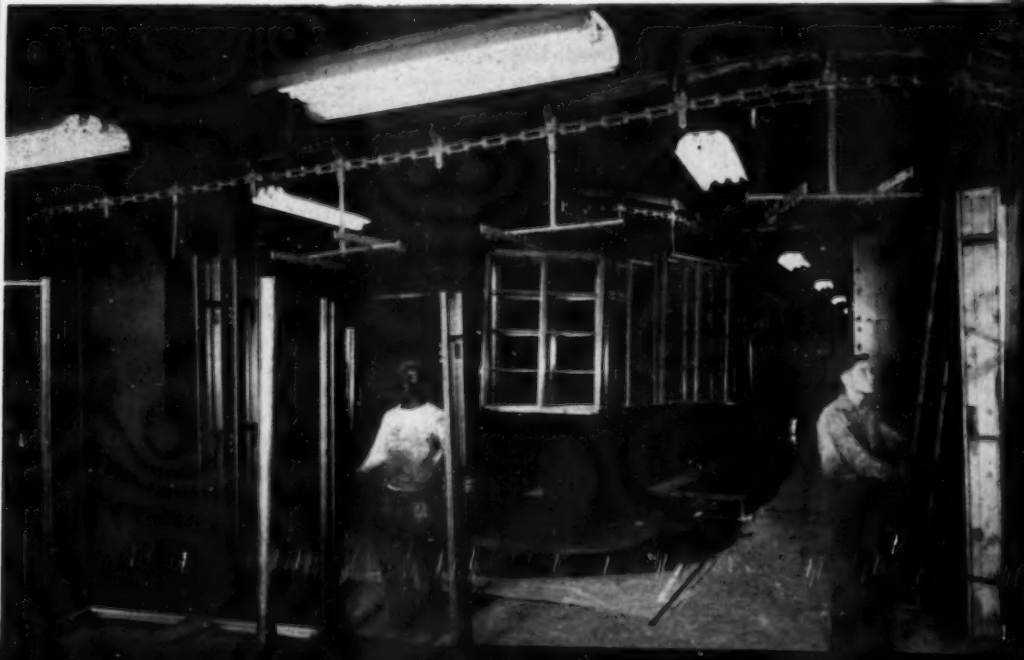
To accomplish proper surface preparation all parts are run through a metal cleaning and rustproofing setup. They are hung to an overhead monorail conveyor which has hangers spaced on 32-in. centers. The conveyor is driven through a variable-speed drive and travels five feet per minute.

Flowcoater used and Prime Coating Setup

The 5-stage metal washer is rather unusual in that the cleaning, rinsing and rustproofing solutions are spread over the product's surfaces by nozzles attached to rotary arms, instead of by the conventional 4-sided multiple spray nozzle setup.

Rotary crossarms in the metal washer revolve in an 8-ft. circle and are fitted with four flow nozzles each of which ejects a fan-shaped flow at 10-lbs. pressure. There are two of these rotary crossarms, one at each side in each of the five stages of the cleaning and rustproofing setup. Also, in each stage, fixed flow nozzles spray from above and below to supplement the action of the rotary crossarms at the sides. [*Continued on page 48*]

Loading conveyor which moves products through cleaning, drying, flowcoating and baking.



Stage	Treatment	Temp.	Elapsed Time in Seconds
1	Cleaning Solution	180°F.	93
2	Hot Water Rinse	180°F.	93
3	Rustproofing	180°F.	93
4	Cold Water Rinse	-----	93
5	Phosphoric - Chromic Acid rinse	160°F.	93

Table I. Analysis of metal cleaning and rust proofing treatment, each followed by rinses.

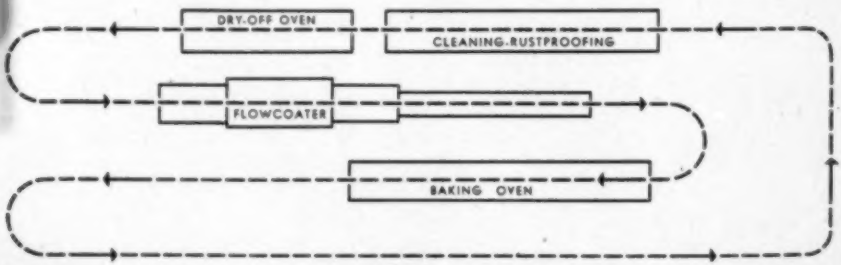
The metal washer enclosure is about 100-ft. long, 8-ft. wide and 14-ft. high. It is fired with oil and operates on a fuel consumption of less than 40 gallons of oil per hour. This is made possible because, by the rotary arm system, less than 90 gallons of solution per minute are circulated. The ratio between pump capacity and the amount of chemical in the tank proper is about eight to one. This slow agitation of the solution allows dirt and grime to settle out instead of being recirculated and passing over the products going through the washer.

An analysis of the treatment of products in the metal washer is shown in Table I. At the exit end of the metal washer all treated steel products enter and pass through a dry-off oven in which they travel for five minutes. Temperature within the oven is 300° F.

Products Primed By Whirling Flowcoater

Upon leaving the dry-off oven the work travels for about 15 minutes to cool before it enters the prime applicator cabinet. The prime coat applicator or whirling flowcoater employs the same type of rotary arm as is used in the metal washer, except that it is a single arm instead of a cross-arm, and it has two flow nozzles instead of four. The pattern of flow is the same—fan shaped.

Inside the applicator cabinet are two rotary arms, one at each side; also, there are fixed flow nozzles above and below. The rotary arms swing in an 8-ft. circle at speeds of from 100-rpm. to 300-rpm. The speed at which the rotary arms are operated is dependent upon the shape and square footage of surface to be coated. For instance, on steel casement sash the rotary arms are revolved at 100-rpm., while on flush-type steel sliding closet doors and steel door frames the speed is increased to 300-rpm. Proof of the efficiency of this method of prime



Plan of overhead conveyor line as it passes through cleaning and prime coating operations.

Do You Have A

FINISHING PROBLEM?

- Automatic Handling
- Metal Preparation
- Drying
- Paint Application
- Paint Baking

As Leading Designers and Manufacturers of Production Handling Equipment and Automatic Paint Finishing Systems, Our Successful Know-How Is at Your Immediate Disposal.

the SPRA-CON COMPANY

SPRA-CON ENGINEERED SYSTEMS

"THE FINISHING TOUCH"

Engineers and manufacturers of conveyors, ovens, washers, and equipment for complete paint finishing systems . . . .

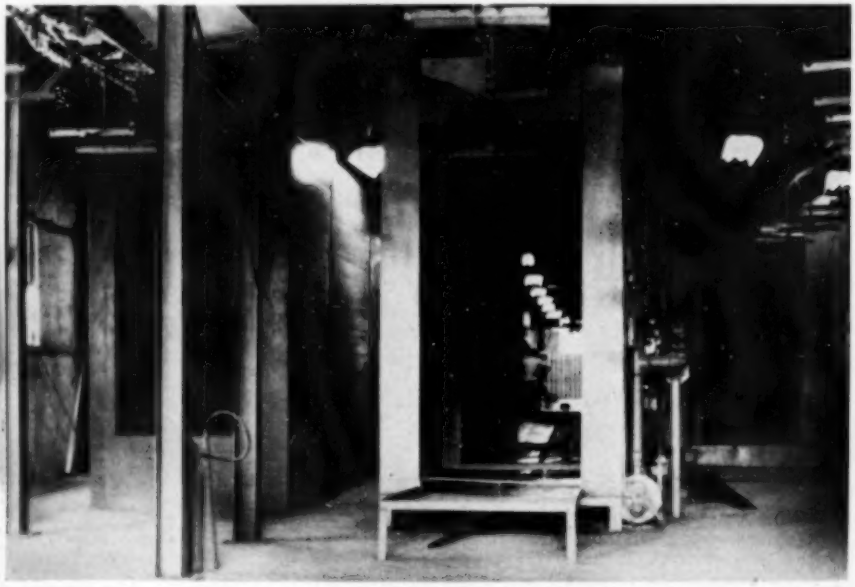
1402 No. Western Avenue, Chicago 22, Illinois

application is shown by the fact that on assembled casement sash going through the machine, with the sash clipped slightly open, not only the entire sash and frame but even the section where the sash is hinged, is completely coated with primer. Also, by this method it is possible to clean and prime satisfactorily two steel door frames and two flush-type steel sliding closet doors, all suspended from the same conveyor rack, thereby increasing the tonnage produced by about 125% over our former system of metal cleaning and prime coating.

Has Built-in Paint Heater

Primer is flowed from the nozzles of the rotary arms at 15-lbs. pressure, and from the fixed nozzles at slightly less than 10-lbs. pressure. A slow speed pump, to hold to a minimum any paint agitation and churning, is used to recirculate paint from the paint tank through automatic filters and onto the work as it passes through the flow-coating cabinet. Excess paint drains off the products and enters the paint tank, to be recirculated.

Two 150-gallon tanks—one for paint and one for solvent—are in service. An agitator, operating in the paint tank, prevents paint from settling during "down" time. Included with the flow coating machine is a thermostatically controlled paint heater by means of which the primer material can be kept at a constant temperature. The temperature at which primer is ap-



At left is the exit end of dry-off oven. Middle opening is entrance to the prime-coat applicator tunnel. At right you see the exit end of baking oven. (See also plan drawing).

CIVILIAN PRODUCTION

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the same dependable source for

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Whether you are buying finishes to meet defense specifications or your own civilian requirements, you can simplify the job . . . find dependable help on special needs . . . eliminate troublesome problems . . . through The Sherwin-Williams Industrial Division with its wealth of know-how and background, both in civilian and wartime experience.

This broad background provides the same extra advantage of experience in Sherwin-Williams finishes supplied to meet military specifications—whether for wood, metal or other surfaces—as in the S-W finishes well known for many years for civilian production, such as Kemclad, Superclad, Kemvar and TV Lacquers. This experience is available wherever you may be, through facilities extending from coast to coast. Call, wire or write The Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland 1, Ohio.

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

plied depends largely on room temperature, outside weather conditions, and the temperature of the parts going through the machine.

Uniform Viscosity of Primer is Important

We have found that the best results are obtained by applying our primer at a viscosity of 15 seconds at 95° F., as measured with a No. 4 Ford cup. Viscosity tests are made at regular intervals throughout the day. Solvent is pumped from the solvent tank into the adjacent primer tank, when necessary, to maintain the correct viscosity of the primer. Through a dual piping system to a central pump, it is possible to cut in either tank. At the end of the day, the primer tank is cut off and solvent is pumped through the system to wash down the machine and drain troughs.

To obtain complete coverage of the product and satisfactory drainage, and to prevent runs and fatty edges, maintenance of the correct viscosity is highly important. Equally important is the formulation of the synthetic primer. The material must be formulated especially for this type of application—flow coating.

Prime Coat Is Baked; Conveyor Racks Cleaned

After the steel products are primed they travel over drip pans for ten minutes to thoroughly drain before they enter the gas-fired oven where the primer is baked for 20 minutes at 300° F. On leaving the oven the work cools for ten minutes before it is removed from the conveyor and packed for shipment.

Conveyor racks are burned-off once a week to remove accumulated paint. The conveyor chain passes over an automatic scraping device which keeps it reasonably free from accumulations of paint. [END]

Unloading primed flush doors, jambs and trim after they have come through the bake oven.

U. S. GOVERNMENT SPECIFICATION FINISHES

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Lusterless, semi-gloss & gloss
lacquers, enamels, undercoats & thinners
to meet virtually all U.S. Gov't. Specifications

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R-M

1244 N. LEMON ST.
ANAHEIM, CALIF.

BINKS

GUN SELECTOR

	Model 18	Model 7	Model 19
Adjustable spray pattern, round to flat	√	√	√
Drop-forged aluminum body, black electrolytic coating	√	√	
Nickel-plated, aluminum body			√
Needle valve, hardened stainless steel	√		
Needle valve, hardened steel*		√	√
Material nozzles, hardened steel with tapered seat design	√	√	√
Air nozzle, gun head, drop-forged bronze, chromium-plated		√	
Air nozzle, Brass, nickel-plated	√		√
Air and material nozzles quickly changed	√	√	√
Air valve, removable cartridge-type	√	√	√
Two-finger trigger with hardened plate	√	√	√

*hardened stainless steel needle valves are available for these guns.

SPR NS

heart of your finishing department

The quality of your product finishes depends upon the spray gun you use. Your spray gun is truly the heart of your finishing department. To insure the uniform, fine finishes demanded by the buying public, choose from the Binks "trio." These three favorites, part of the Binks full line, are setting the pace for better... faster finishing.

Look carefully at any Binks spray gun. Observe the precision workmanship... the engineering know-how evidenced in its efficient design. Wear-resistant materials are chosen for all vital parts, insuring long economical, trouble-free service. Try out one of these performance-tested guns. Note its fast, uniform coverage... its adjustable spray pattern... the convenient, back-of-gun location of its controls.

There is a Binks precision-made gun for every type of finish... a choice of 1,050 nozzle combinations. To be certain that you get exactly the right gun and nozzle, Binks engineers will gladly test your material in the Binks Research Laboratory.

Send now for free information on these guns.

"The goal of American ingenuity is the creation of better products at lower costs."

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President

Binks

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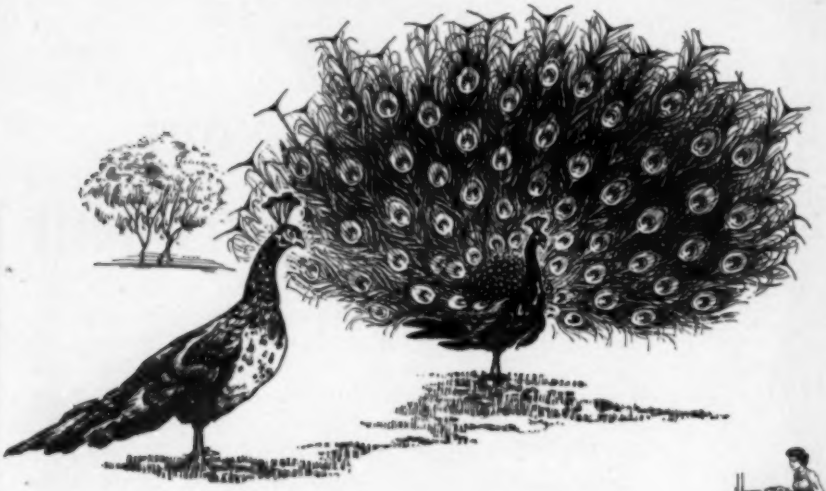


Like the Peahen,
People Sure Go for Good Looks

NATURE knew what she was about when she decked the peacock in his fine feathers: eye-appeal implies product superiority that must be investigated.

Duranite Hammer and Duranite Wrinkle finishes give your products the "plumage" which can turn them into eye-catchers. These enamels not only possess durable good looks but have the ability to obliterate metal surface blemishes. They cut down the number of coats required . . . are applied and cured with conventional equipment . . . cost no more than ordinary finishes.

If you have a problem involving product finishing, let a Zapon Customer Service representative and Zapon *Service From Every Angle* tackle it right on your own production line.

Service from every angle . . .

that's ZAPON

REG. U. S. PAT. OFF.

ATLAS POWDER COMPANY

Industrial Finishes

Stamford, Conn. · North Chicago, Ill.

DURANITE—Trade Mark
WRINKLE—Licensed by New Wrinkle, Inc.

Breathing Equipment Saves...

A maintenance man with proper breathing equipment can work rapidly and safely on a cleaning or emergency job in fume laden area or in conveyorized oven, thereby saving a long and costly halt in production.

By EARLE M. SCOTT

President, Scott Aviation Corp., Safety Equipment Division

THERE IS A growing consciousness that while it may be possible to get along without breathing equipment in some manufacturing plants, the equipment is useful, profitable and an important means of safety in others. Another large dividend in the form of worker comfort and morale is also realized.

"We have no use for breathing equipment in our plant except in some remotely-possible emergency." That was the answer given to a breathing equipment salesman by the Purchasing Agent of an Eastern plant engaged in light manufacturing operations.

The salesman asked to make a trip through the plant. During the course of his tour, he saw a degreasing machine and raised the question, "How do you clean this degreaser?". His guide found the supervisor in charge of that department and repeated the question to him. He was told that the degreaser was cleaned about every two or three weeks on Saturday or Sunday, so that the fumes resulting from its cleaning would not make the rest of the department untenable, and so that degreasing operations would not stop during working hours.

Saved Time and Money Cleaning Degreaser

Closer investigation brought out the fact that this cleaning operation on double time was costing the company about $24.00 every two weeks. The salesman suggested that the purchase of a piece of breathing equipment costing them approximately $200, would permit the operation to be done by one man in one hour from 3:30 to 4:30 every other Friday afternoon, without overtime, without danger and without inflicting a headache on the man who did the job. The resulting saving in dollars was $160.50 for the first year and thereafter it would be close to $400 per year. This was in a small plant employing less than 60 people.

Another example of the savings possible by the application of breathing equipment can be found in the plant of a prominent Midwestern manufacturer. Here the enameling ovens were occasionally shut down by breakage or jamming of the conveyor chain, or by the in-

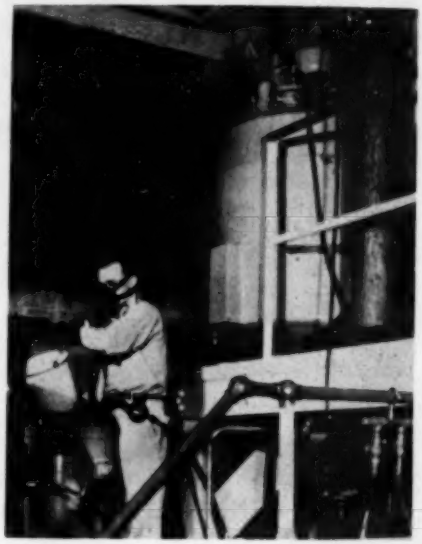
frequent dropping of an enameled part from the conveyor chain. In order to eliminate the need for completely reworking the entire oven charge, it was necessary to slowly cool the oven before entering. Production operations necessarily had to cease and 35 people would be sent home.

Fixing Production Jam Saved Oven Shutdown

One of these stoppages occurred just at the moment that a breathing equipment salesman was sitting in the front office, in another attempt to convince the superintendent that breathing equipment could be a help in his production operations. The salesman was invited to come out quickly to the enameling oven and see what his breathing equipment could do to immediately effect the end of a stoppage.

The equipment salesman donned his self-contained air breathing device; over it he placed a loose woolen hood and an asbestos hood, entered the oven at a temperature of several hundred degrees, replaced an article on the conveyor chain hook, and made his exit after having been in the oven about 30 seconds. He was hot, smoking and perspiring profusely, but without ill effects. The oven was immediately re-started and production was continued. The manufacturer immediately bought two units in the full knowledge that if he used them only once, they would more than pay for themselves.

Some users of self-contained air breathing equipment are using suits of asbestos or other heat-resistant materials to protect the man and equipment from direct heat.

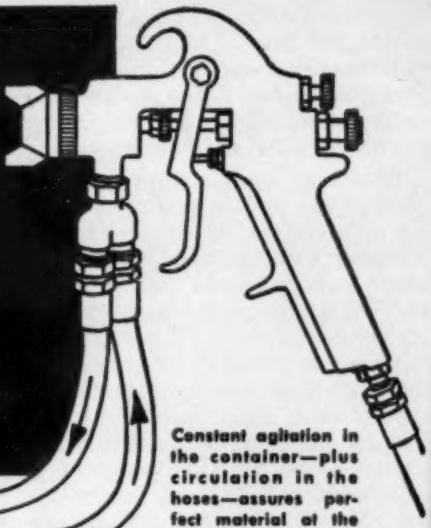


This man's work requires him to handle a variety of toxic solvents in a relatively limited area. The room has general forced ventilation which clears the atmosphere quickly after each liberation of irritating substances but the man is protected during frequent short exposures.

In plants where materials of lesser toxicity are handled or occasionally encountered, somewhat similar but more flexible breathing equipment is available. Many companies engaged in the handling of materials of an objectionable but not deadly nature are finding that demand air respirators, such as are illustrated in the accompanying picture, offer comfort and protection to the worker without being a high drain on plant compressor lines.

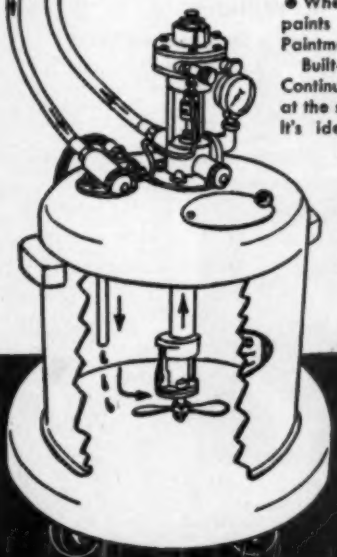
The demand respirator system uses only about 50% of the volume of air required by constant-flow systems, therefore, the saving in air is appreciable. Painting, spraying, cleaning and other operations in

KEEPS METALLIC PAINTS IN *Continuous Suspension* —right at the gun!



Constant agitation in the container—plus circulation in the hoses—assures perfect material at the nozzle.

. . . even when spray gun is idle!



● Whether spraying is continuous or intermittent, metallic paints *can't* settle out when you use a Graco Circulating Paintmaster.

Built-in agitator keeps paint mixed in the container. Continuous circulation assures a perfect mix in the lines and at the spray head—even after gun has lain idle for a time. It's ideal for spot-spraying operations in which quick-settling metallic-base finishes are used. And it results in better-quality finishing.

Graco Paintmaster fits right over original 5-gal. container, pumps paint without transferring to pressure pot. Saves time, eliminates spilled paint. Low pressure, less overspray. 55-gal. models also available. Write today for free literature.

GRAY COMPANY, INC.
14 Graco Square, Minneapolis, Minn.

GRACO
Paintmaster
(SPRAY GUN SUPPLY PUMP)

objectionable (not deadly) atmospheres, all can be handled by this less expensive equipment with comparative comfort to the worker. The end result is higher efficiency, high worker morale and satisfaction.

Breathing equipment of the proper type can reduce operating cost; can eliminate much of the hazard inherent with the handling of some toxic materials and can eliminate the hazard in an emergency. The growing scarcity of labor and the quickening necessity of higher production would seem to make it mandatory that every available means be used toward the best utilization of labor and the attainment of an uninterrupted flow of production.

The intelligent use of breathing equipment can work wonders in accomplishing those desirable results. Breathing equipment manufacturers will gladly prescribe the correct equipment for your operations.

Here is a man cleaning the dirt, smudges and grime from factory windows with a rotary wire brush. Mounted on portable tools operating at 3450 revolutions per minute, or more, wire brushes can do a job that cannot be done with soap or water, detergents or acids. — Photograph and story from Osborn Mfg. Co., 5401 Hamilton Ave., Cleveland, Ohio.

Borlet Joins United Chromium

On November 1, Chet Borlet joined the sales and service staff of United Chromium, Incorporated. Mr. Borlet, who received his higher education at Kent State University, has been well known for the past 15 years as a member of the plating sales department of another chemical company.

Upon completion of orientation courses at the United Chromium organic coatings laboratories and plating laboratories at Carteret and Detroit, Mr. Borlet will report to the Los Angeles regional office of the company. From these he will sell and service the entire Unichrome line of plated and organic coatings for metals including S.R.H.S. Chromium, Dips for zinc and cadmium, Organic Product Finishes, and Ucilon Protective Coatings.

J. B. Williams, I. S. R. for Hilo in Connecticut

Carl J. Schumann, President of Hilo Varnish Corp., Brooklyn, announces the appointment of James B. Williams as Industrial Sales Representative for the State of Connecticut.

Jim Williams has been in the Protective Coating Industry for over 16 years, having covered in the past most of Central America and the Eastern Seaboard of the United States. When located in New York he was active on the membership committee of the New York Paint, Varnish & Lacquer Association and at other times was active in the New England Club.

Williams lives at 426 Main St., Meriden, Conn., which is centrally located in the concentrated industrial triangle in Bridgeport, Hartford, New Haven and environments. Mr. Williams will be supported by an augmented staff of technicians in the Research Dept. at Hilo.

The Sign of

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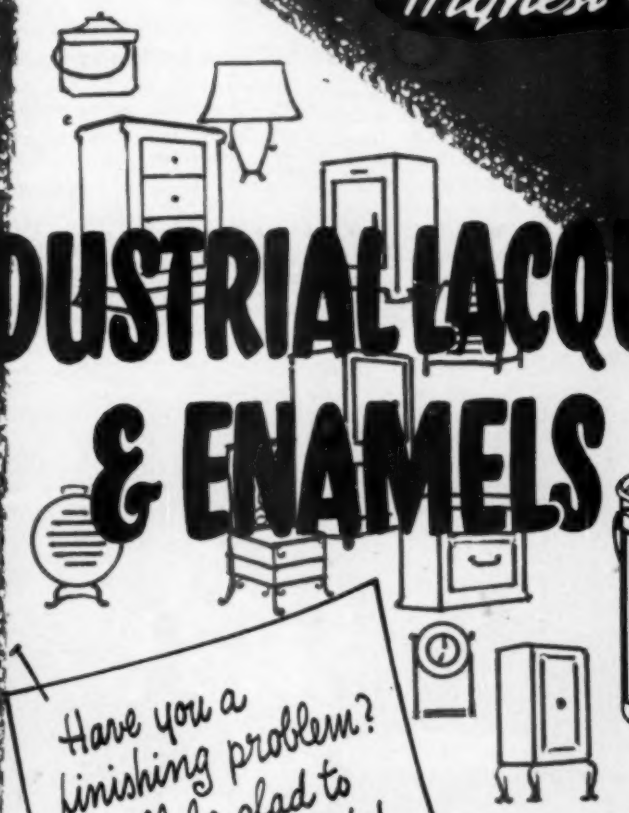
Highest Quality

INDUSTRIAL LACQUERS & ENAMELS



Have you a finishing problem? We'll be glad to solve it!

THE CLINTON COMPANY

1210 ELSTON AVE. CHICAGO 22, ILLINOIS

Reconditioning Steel Drums

THE Acme Steel Drum Co. of Newark, N. J., reconditions used steel drums for companies shipping a variety of liquids such as paints, chemicals, foods, perfumes, etc. Delivered many times in a battered and rusted condition, the drums are processed rapidly through a highly efficient production line that turns out finished drums at a rate of 330 to 360 per hour. Every step in the process requires precise timing.

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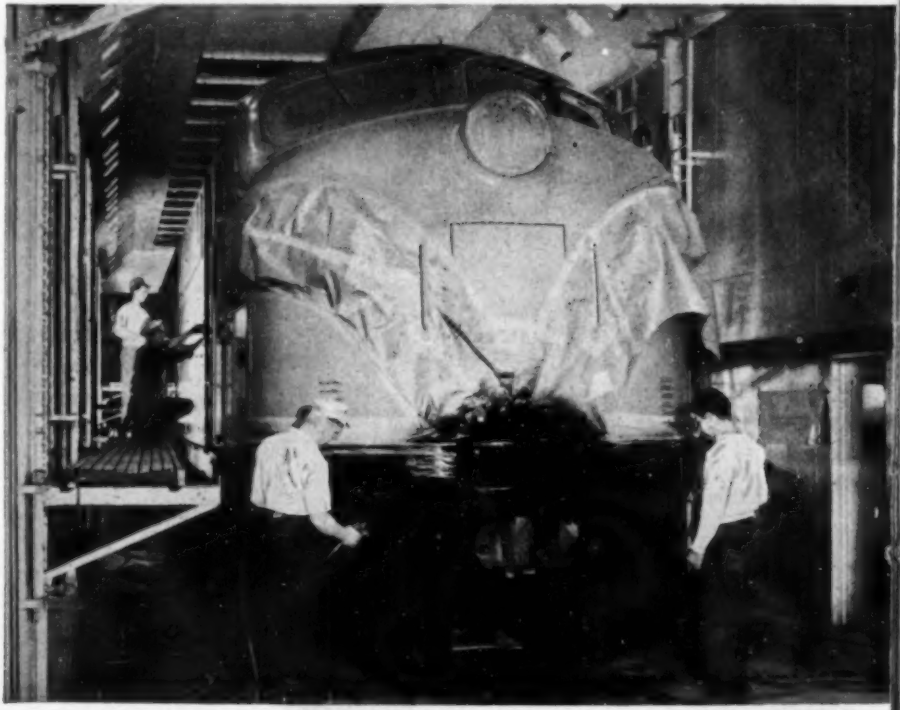

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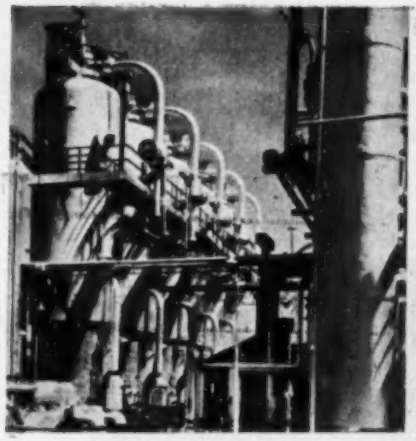

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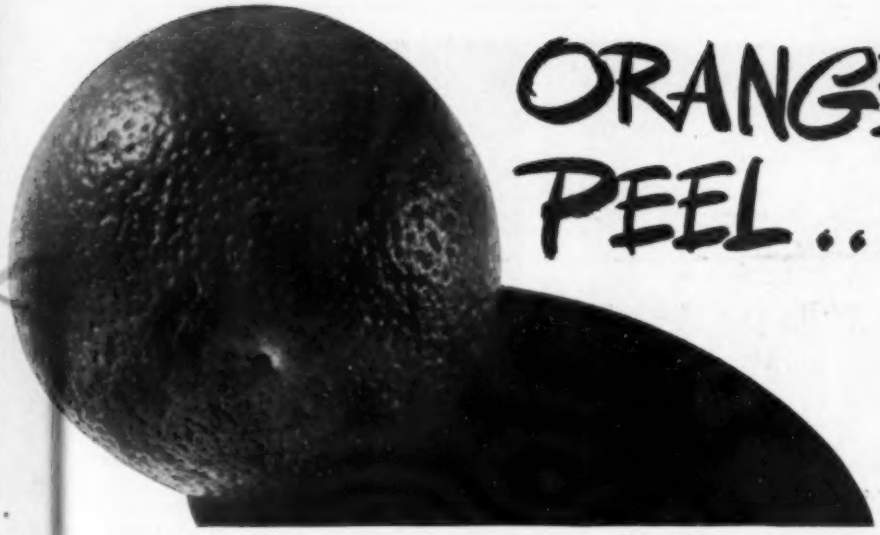

ORANGE PEEL...

ITS CAUSES AND REMEDIES

EVERY FINISHER knows that if or when the surface of his sprayed finish doesn't show up perfectly smooth—in other words if, when viewed at an angle, it looks like an orange (a rough-peel orange as viewed near the edges) then he has a very faulty surface finish. It's what practical finishers all over the U.S.A. refer to as "orange peel".

Finishers of furniture and automobiles and all kinds of other products, made of wood or metal, realize that under certain conditions their finishes may show an orange peel effect—perhaps definitely or perhaps only faintly.

Actually, what happens is that the sprayed film doesn't flow out smooth and level, or it doesn't remain smooth when it sets up and dries.

One experienced foreman's brief recommendation for avoiding an orange peel effect, anywhere, any time, is to: 1) adjust the spray gun, air pressure and material so that you have perfect atomization when spraying (no spitting) and 2) spray a full wet coat of finishing material over the surface. At the factory where this man is foreman they use reasonably high air pressure for spraying and never have any orange peel trouble. His recommendations are worth remembering: "Perfect atomization of the sprayed material, and a full wet coat".

Perfect Atomization and a Full Wet Coat

Well, let's go into this a little further. How do we get "perfect atomization of the material being sprayed"? There are at least three main factors to consider, namely: 1) viscosity of the material being sprayed, 2) the correct type of spray gun for spraying the material, and fitted with the right kind of air cap and fluid nozzle; 3) air pressure sufficient to break up or perfectly atomize the material being sprayed.

The material being sprayed may be too high in viscosity (too heavy or too thick or too cold). If so it needs thinning with a suitable thinner (or with heat). Ordinarily the viscosity of the material can be satisfactorily adjusted by mixing in a suitable solvent—one that is compatable with the coating material and which evaporates slowly enough to allow the sprayed material adequate time to flow out to form a smooth level film before it begins to set up and start drying. The thinning of a finishing material can be overdone, of course. If the material is made too thin, you may have runs and sags on vertical and near vertical surfaces.

Using Wrong Thinner Can Cause Orange Peel

Choice of the thinners* or solvent for use in a lacquer, varnish or synthetic material, as supplied or recommended by the manufacturer, will usually work satisfactorily; but occasionally a finishing material will be designed for one type of product or set of conditions, and the finisher will try it out on various other products or use it when different conditions prevail. For instance, a finish to be used on chairs or bric-brac, with lots of open work, would have to be retarded as to flow; in other words it should have slower evaporating solvents, because of the continuous volume of spraying air that is directed toward the work as the operator moves around the piece so as to hit all angles and the under sides of the cut-outs. This prolonged blowing of compressed air tends to speed up the drying of the section already sprayed, while the operator works on another part of the same piece. On the other hand, if the worker is spraying a flat sided cabinet—one without any unusual moulded or carved work—a faster drying finish could be used.

There is also the point that the finish manufacturer will recommend a certain type or formulation of thinner, and none will be purchased or available at the customer's plant, and some other type of thinner will be substituted. If the substituted thinner is faster in its evaporating rate than the one recommended, naturally some change in drying will occur and there is a possibility that an orange peel effect will be the result. Usually the safest course is to follow the finish manufacturer's recommendations; then if trouble occurs, call in his representative.

An unlikely but barely possible cause of orange peel effects may be the finishing material itself. Perhaps the finisher (with all good intentions, of course) has mixed some of this and some of that and come

*One thinner may be so formulated that it contains a blend of several solvents.

up with something that isn't suited to a first-class finishing job. Or the material may be of a quality or character unsuited to what it is being used for. However, let's not blame the finishing material until after everything else has been checked and proved to be in perfect condition.

Spray Equipment; Is it Correct? Properly Adjusted?

The spray gun or its air cap or fluid tip may not be in perfect working condition, or may not be exactly suited to the material being sprayed. If possible, call in an experienced representative of a manufacturer of high grade spray guns. He is in position to give accurate advice about any spray gun.

Remember that there are special spray guns for different materials, and different air caps and fluid tips for all grades of sprayable liquids. There is one suited for practically every purpose. Most spray guns will work with lacquer, varnish or synthetics, but perhaps not efficiently with the cap and tip as is. Look into this and make sure that the spray gun and its air cap and fluid tip are suited to the material being sprayed.

The amount of air pressure used at the spray gun to atomize and spread the material is important. The air pressure (at spray gun) can be too low for proper atomization of the material, or it can be too high for best results. For spraying lacquers, many finishers use from 40-lbs. to 60-lbs. air pressure, averaging around 50-lbs. For spraying varnishes, the pressure is usually a little higher—say 50-lbs. to 70-lbs. pressure, mostly around 60-lbs. to 65-lbs., but changing as the viscosity and percentage of solids in the varnish change. Generally 15-lbs. to 20-lbs. pressure at the pressure tank will handle most varnishes. *The lowest pressure that will do the job will be best,* as a high tank pressure will force the varnish out of the gun too fast for the atomizing air to properly break it up.

For spraying synthetics many spray operators use air pressures that range from 60-lbs. to as high as 85-lbs. pressure, averaging mostly around 70-lbs. to 75-lbs. Here, too, as in varnishes, viscosities, solids content and general application procedures will have to be considered. Remember, *some air pressure is lost in a long line of hose between the air connection (where pressure gauge is)* and the spray gun, so when the pressure gauge reads, say 70-lbs., the pressure at the spray gun may be only 65-lbs. or 60-lbs. or even less.

A common cause of orange peel is improper adjustment of the air pressure in relation to the opening of the spray gun nozzle. If the air pressure is too high, a certain amount of volatile thinner in the material may be blown away, leaving the material too heavy to flow out smoothly. The same would be true if the gun were held too far away from the surface being sprayed, or if the material is not properly reduced.

If the air pressure is too low, the material will not be properly atomized; it will appear to be too heavy to flow out to make a smooth level film. Trouble will also occur if the spray gun is held too close to the surface being sprayed. [*To p. 70*]

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A little practice will enable the operator to properly adjust these conditions. It is necessary that this be done with each different material that is sprayed, as the correct air pressure and nozzle opening satisfactory for one material will probably not be satisfactory for a material of different viscosity. Once established, however, these adjustments will aways be correct—provided, of course, that the same viscosity of material is maintained.

The Spray Operator— Most Important Factor

Let's consider the spray operator. Here we have the one factor that can cause or overcome most orange peel trouble. A man who has been spraying for a number of years will naturally try to find or develop the best method, air pressure, etc., to do a good job on whatever he is working or working with. Many operators have a tendency toward using too high rather than too low air pressure for spraying. Some men insist on using 80-lbs. to 90-lbs. pressure for spraying low-solids, low-viscosity lacquers, when the pressures should be no more than 50-lbs.; it may require quite an educational program to convince them that they are wrong. The logical rule to follow: *use only what air pressure is needed to properly atomize the material being sprayed.*

Then there is the question of distance from the work, speed of stroke, arc of stroke, etc. Generally, the proper distance between spray nozzle and the surface being sprayed is around 8-in., slightly more or less. The speed of spraying should be just enough to apply a wet coat, without pile-up or without producing too dry an appearance. The "arc of stroke" should be "straight" for straight or flat surfaces, the operator holding his gun so that it follows along at a reasonably uniform distance from the surface being sprayed and so it always points straight toward (at right angles to) the surface being sprayed. The spray gun should never be swung in a semi-circular arc, nor pointed at an inclined angle at the end of each stroke.

Editor's Acknowledgment: Valued assistance in preparing, checking and rechecking every statement included in the foregoing article was generously supplied by the following men of long practical experience in finishing operations: Horace Chester of Lenoir, N. C., Edwin Hogstrom of Chicago and Jim Myers of Indianapolis.

The following article on the same subject, but giving more detailed instructions about adjusting the spray gun, material pressure and atomizing pressure, with recommendations on the technique of handling the spray gun, comes from a man of experience who conducts spray painting classes for a large and well known manufacturer of spray guns and spray painting equipment:

Adjusting Spray Gun for Smooth Spray Work

By W. BEACHAM

TO EXPLAIN how to overcome "orange-peel" would demand a thorough explanation of the spray gun, compressor, airlines, nozzles, material pressures, the make-up of the materials being sprayed and their solvents. We all have

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different ideas and probably my methods are different from others.

I believe the best method of overcoming or reducing "orange-peel" is by a slow elimination of the possible causes, so let's start:

Start Regulating the Material Pressure

We assume that the material to be sprayed is in a pressure tank and connected to a suitable spray gun. First, we shut off the compressed air to the pressure tank and regulate it to obtain about 5-lbs. pressure on the tank gauge. Now pull back the spray gun trigger. If the material dribbles out of the spray gun nozzle, raise the material pressure at the tank. If the material shoots clear across the spray booth, lower the pressure. The material should travel from the nozzle in a straight line for about 3-ft. before arcing toward the floor.

Then Atomizing Pressure and Fan Spray Pattern

Next, turn on and set the atomizing pressure at 25-lbs. The "fan" control on the spray gun should be wide open. Place a piece of cardboard in the spray booth. Hold the spray gun with its nozzle facing the cardboard. There should be a space of 8-in. between the spray nozzle and cardboard. Snap the gun trigger; this will show the fan pattern on the cardboard, and the break-up or atomized particles around the edge of spray pattern.

Now before checking anything else, see if you have a perfect fan spray pattern—not one that is heavy in the center, or with heavy ends and thin center, or heavy at either top or bottom, or perhaps shaped like a banana. If any one of these defects show on the cardboard, you will probably have orange peel, because you are trying to spray with a defective nozzle. It's cheaper to use a new nozzle.

If the fan pattern is perfect, look at the atomized particles around the solid fan pattern. You will probably find these particles are fairly large and uneven. If so, slowly raise the atomizing pressure until these particles are fairly even in size. Don't look at the regulator gauge; you are interested in results, not what the gauge reads at present.

When even-size particles are obtained, recheck the shape of the fan-like pattern. If changing the pressure of atomizing air shows a defective pattern, the air in the small holes in the air cap is not balanced—and this may result in orange-peel.

Check Spraying Results After Making Adjustments

Next, spray two strokes across the cardboard or other surface. If you do not obtain complete hiding power—in other words if you can see the color of the base through the paint—your spraying speed is faster than normal. Raise the material pressure one or two pounds (no more) and raise the atomizing air pressure about three to five pounds, and spray two strokes. You will find an even wet film with good coverage. You will be surprised at the low air pressures. Probably the gauge will show only 40 to 45-lbs. and, figuring the drop of pressure in the hose, you may find the atomizing pressure at the nozzle will be only about 25 to 30-lbs. [*To 74*]

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Now adjust your spray pattern to measure 8-in. wide when the spray gun is 8-in. away from the work. Your results, after following this procedure and making the adjustments outlined will be less gun strokes, meaning less effort, more production, higher gloss paint film, wetter film, better flotation, richer color, and an even film—and by that I mean no orange-peel due to the spray gun.

When All Else Fails, Check Paint and Thinner

If orange-peel should appear, now that the spray gun is correctly adjusted with the correct nozzle to obtain an even fan pattern, regardless of pressure, we must look to the paint—and I am almost willing to guarantee that the orange peel is caused by using a solvent that is not in sympathy with the vehicle.

If the correct solvent is not used, the vehicle will have a tendency to jell. This jell will permit the extenders in your paint, which are solids in suspension, to dig pits in the jell. The surface tension of this wet jell will prevent the film from leveling off.

Your paint supplier knows what solvent or blending of solvents was used to put the resins in solution, and if a different solvent is used for reducing, the solvent may become a diluent and not a true solvent.

Final Suggestions . . . . Use Sound Judgment

By following these few simple rules, "orange peel" can be reduced or eliminated.

Follow the recommendations of your spray equipment manufacturer for nozzle combination.

Be sure your material nozzle has a large enough orifice to deliver enough material to suit your speed of application at from five to ten pounds pressure (material pressure).

Follow your paint manufacturer's recommendations for reducing, and also use the correct solvent.

I realize that my statements regarding air pressures will cause some finishers to hit the ceiling, but I am not making any statement that I am not willing to prove.

Editor's Final Note: Conditions vary considerably in different establishments and frequently they are something less than ideal in production factories, therefore this fact must be taken into consideration when judging or acting upon any of the suggestions or recommendations included in the preceding articles.

The paint and lacquer chemist could add something valuable to these articles too, but since the majority of users of finishing materials prefer to avoid going into the technique of paint and thinner formulation, we are omitting anything detailed along this line.

Western Metal Show Will Be in Oakland, March 19-23

The seventh Western Metal Congress & Exposition will be held in Oakland in March 19 through 23. It will affect thousands of persons and attempt to answer problems important to the entire industry, the nation, and the world.

Because of its extraordinary import, more than 100 committeemen are participating actively in arrangements. Last staged in Oakland in 1947, the Exposition, one of the largest trade shows of its kind, will be even larger and more vital in this critical period, according to William H. Eisenman, secretary of the American Society for Metals, and general manager of the great show and congress.

Its theme, "Production for America," will be divided into two phases—production for defense or rearmament, and production for civilian or non-emergency use.

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Finishing CORDOVAN MAHOGANY

By RICHARD BLACKWELL

THE CURRENTLY popular Cordovan mahogany finish does present a number of special problems in finishing. Some finishers seem reluctant to undertake the work because of the problems involved, and the care that must be taken to insure a perfect finish. In this article I do not propose to attempt to outline a theoretically "correct" method of achieving this finish, for there are probably as many correct ways as there are wrong ones. Rather, I shall take up some of the special problems likely to be encountered, and suggest certain practical and successful solutions.

The typical Cordovan finish is a deep rich mahogany color with black pores. It may or may not be strongly highlighted with shading stains. The topcoats are built up to sufficient thickness to permit rubbing to a glassy smooth surface and polishing to a high luster.

Because of the deep color and glass-like finish required, any slight defect in the wood or slipshod color application or poor filling or sanded-through or rubbed-through places—any one of these becomes highly magnified. Questionable workmanship that will "get-by" in some of the lighter finishes will never do on a Cordovan job. Materials and workmanship must be of the best.

Selection of Wood Solid or Veneered

As in any critical wood finishing problem, first consideration must be given to the wood in the white. If the wood is solid, it must be carefully selected and matched for grain, figure and color. Joints must be tight and true, and the moisture content should be around 6% to 10% at the time of finishing. In veneered stock, the corewood should be well selected and free of knots and other defects. Some defects in

corewood will not show through the cross-banding and face veneer until after the finish is polished.

Correct panel construction is important for a Cordovan finish. The veneers must be carefully selected and laid up. Finally, the panel face must be smoothly sanded at the belt sander, the final sanding being done with No. 5/0 or No. 6/0 abrasive paper. After assembly, close inspection for defects, skillful repairing as required, and a light careful sanding with a portable machine or by hand will pay dividends in the simplification of finishing and reduction of rejects afterward.

Sizing Treatment; Sanding; Staining

In order to get a more uniform, less absorptive surface for staining, some finishers prefer to size the wood with thin clear glue size or some of the newer sizing preparations now available. This treatment stiffens the wood fibers so that the sanding which follows will cut them off clean. This preliminary sizing does seem to help make possible a more uniform and satisfactory job of staining and filling.

After the final sanding and just before staining, it is important to remove any sanding dust that may be imbedded in the wood pores. It may be removed by going over the surface with a dusting gun (shooting a blast of compressed air) perhaps accompanied by light skillful brushing with a clean stiff-bristle brush.

Staining is a critical operation in the production of a Cordovan color on mahogany. Because of the depth of color required, some finishers prefer to use a water stain which they apply heavily and then wipe off for uniformity. Others do a good job with non-grain-raising stains, especially when the background color is not too deep and when extensive shading is to follow afterward. Good work is being done both ways. The selection of the type of stain to use in any particular case will depend largely upon the finisher's preference and perhaps upon certain shop conditions at the factory.

Wash Coat; Light Sanding Filler; Wiping; Drying

In order to avoid any possibility of having a muddy color, the work should be sprayed with a wash coat after staining. The wash coat may be a very thin coat of thinned shellac, lacquer sealer, lacquer, or some special material suitable for the purpose. The wash coat is sprayed at 5% to 10% solids. It dries quickly. Then the surface is sanded very lightly but completely with fine sandpaper. Naturally this light sanding is followed by cleaning with an air gun or clean wiping material, preferably a tack rag.

Now the dark Cordovan filler is applied. *The wood pores must be well filled and the surface wiped clean.* It is imperative that a non-greying filler be used, for any greying of the filler in the Cordovan system would be ruinous. Constant and close supervision of the filling operation is required if the results are to be uniformly good. Slipshod workmanship here will make it practically impossible to obtain that full-bodied, smooth highly-polished surface which is essential. [*To 78*]

Sealer Coat; Sanding; Gloss Coat of Lacquer

Adequate time and suitable conditions must be provided to insure thorough drying of the imbedded filler before any follow-up operation is started. When the filler is perfectly dry a full wet coat of high quality lacquer sealer is sprayed on. Spray just enough sealer to produce a wet coat that will flow out and settle down to a smooth uniform thickness film on the surface. Too light a coat may cause orange peel and bubbling. Flooding the surface with an excessively heavy coat poses the danger of runs and swelling of the filler. Either may result in a rough finish. The sealer coat, when thoroughlly dry, is lightly sanded with very fine sandpaper, care being observed to avoid cutting through at corners and edges.

The first coat of gloss lacquer is sprayed on. This should be a lacquer of excellent quality with the best obtainable flowing properties. Shading is usually sprayed over the first coat of lacquer because now the color can be seen. Some finishers shade over the sealer successfully, but a sanded sealer surface does not show up the true color as well. Then one or two more coats of gloss lacquer complete the job. In some cases the shading is done directly over the filler.

Most finishers prefer to use a lacquer sealer of about 21% solids content. Lacquer finishing systems for fine furniture and cabinet work generally include two or three coats of lacquer over the lacquer sealer. Where the lacquer used has a solids content of 20% to 25%, three coats are usually considered desirable to build up a hard, tough protective film, but when lacquer of 27% to 30% or more solids is used, two coats are enough—that is unless something extra is desired.

Cold Checking Danger; Thickness of Film

Because of the film thickness required to produce a full, highly polished finish, and the efforts of some lacquer manufacturers to make print-free lacquers that will take a high polish, cold-checking of the finish is sometimes encountered. This trouble can be avoided by purchasing and using high grade materials and by not building up too great a film thickness.

Even the best lacquers will cold-check if they are applied too heavily, that is, if the film or coating is built up too thick. The safe maximum dry film thickness from the wood up, including the sealer coat, seems to be in the range of 2½ to 4 mils. Unless the surface is flooded, a wet coat of sealer and three coats of lacquer in the 20% to 25% range, or two coats in the 25% to 30% range will not exceed this. However, any attempt to cover up some slight or careless preliminary work with additional coats of lacquer will definitely introduce the danger of cold-checking. It is far better to clean off the work and start over, even though this method of handling rejects is more costly.

Drying; Rubbing; Polishing; Orange Peel Trouble

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be hard enough to take a high, clear polish and yet have the necessary permanent elasticity to insure freedom from cold-checking. Lacquer films that are too soft and elastic will not take a high, haze-free polish and they are not safe from the danger of "printing". The furniture manufacturer should satisfy himslf that the lacquers and sealers he is using have the necessary working properties, with maximum safety factors in regard to cold-checking or printing.

After the last coat of lacquer is dry the finish must be rubbed and polished. Because of the danger of shrinkage from the heavy film applied, most finishers prefer that the finish dry 48 hours before rubbing. This time can be cut in half if the finish is force-dried overnight in the heat range of 100° to 120° F.

The first step in rubbing is to cut down the surface film until it is free from any trace of orange peel or shrinkage over the pores. The better the filling job and the better the flowing properties of the lacquer, the less rubbing will be required. In this connection, it should be noted that too-high air pressures, too-thin coats, and too-high air velocities in the spray booth often cause orange peel. Even the positioning of an article too close to the exhaust fan while it is being sprayed can cause too-rapid setting of the sprayed coating, with the danger of trapping solvents, poor flow and roughness from overspray.

Trapped solvents may not be noticed until after polishing, when the surface appears to be covered with millions of tiny bubbles that failed to burst and flow out. They may not be seen until they are cut into by the rubbing, and are filled with rubbing compound. Close attention and careful control of spraying conditions will eliminate this trouble. Slowing down the drying of the sprayed coating by using retarder in the lacquer, will help to prevent this trouble in the event that other methods fail. One method of covering up this condition, if it is not too severe, is to use some Van Dyke brown ground in oil in the rubbing oil, or to finish the job with a highly colored wax.

Technique of Rubbing, Polishing and Buffing

After the surface is cut down smooth by wet sanding, the fine scratches must be eliminated and the surface must be rubbed or buffed to a high polish. The rubbing should be done with No. 400 wet-or-dry abrasive paper, if this is practical. If a heavier coarser cutting must be made with No. 320 or No. 360 abrasive paper, this coarse cutting should always be followed by rubbing with No. 400 or even finer sandpaper. The final polish will be brought out by rubbing with rottenstone, by hand polishing, or by buffing. In order to save time, many finishers buff the rubbed finish to a high polish by using a high-speed mechanical buffer.

Mechanical buffing is fine if it is done by a careful, experienced and skillful operator. Otherwise, buffing introduces two dangers. The first is the possibility of "burning" the lacquer film with frictional heat. This can cause the deposit of tiny hard globules or specks. [*To p. 82*]

Can YOUR Lacquer Do This?

NCP11 Gloss Lacquer Takes 25 Cold Check Cycles Without Cracking!

Here's the high gloss furniture lacquer to end all your lacquer problems! Tested in actual service over a period of years, it has come through use and abuse with flying colors. Tested under the laboratory cold check cycling system, average lacquers cracked in 1 to 2 cycles . . . NCP11 took 25 cycles without cracking. Use this lacquer once . . . and it will always be your lacquer.

NCP 11 High Gloss Lacquer took 25 cold check cycles from 120 degrees to minus 6 degrees Fahrenheit.

CHECK THESE GREAT FEATURES!

★ Excellent Print Resistance
★ High Lustre ★ No Orange Peel
★ Can Be Hand Or Machine Rubbed
★ Can Be High-Speed Machine Polished

★ *SEND FOR A 5-GALLON TRIAL ORDER AT REGULAR DRUM PRICE*

The National Chemical & Plastics Co.

1424 PHILPOT ST. • BALTIMORE 31, MD.

Further Suggestions About Mechanical Buffing

The other possible danger that could occur as a result of buffing is a slight raising of the filler out of the pores by frictional heat. While this defect is not too unsightly, it can be seen occasionally on buffed Cordovan finishes. Just how this occurs is not fully understood but we do know that it does not show up when the buffing is done lightly and skillfully.

Perhaps the best way to get a smooth, highly polished surface is to first cut with No. 400 abrasive paper, then hand rub with compound to remove most of the scratches, and finally buff lightly with a lambswool buffer, using a very mildly abrasive buffing compound. A final cleaning up by hand with an emulsion type cleaner completes the job.

A further suggestion is that extreme care must be taken to avoid cutting through corners and edges while rubbing and buffing. On Cordovan finishes especially, any cutting through would produce an unsightly white edge which is difficult to repair. One way to reduce the possibility of this trouble is to slightly round all edges with fine sandpaper on a felt block while the wood is still in the white.

After they have been rubbed and polished, the surfaces should be protected from dust by a covering of clean paper. The cabinet or piece of furniture should not be pressure-packed until the next day, if that is practical, in order to avoid the possible danger of pressure-marking or "printing" the freshly polished surface.

Designed by Frank Lloyd Wright, the 15-story tower which dominates this group of buildings at Racine, Wis., is the new Johnson Wax laboratories where basic research will be carried out and new wax products developed. The building in the foreground adjoins the tower and completes the present administration and research center which Wright designed for the company.

"Tumb-L-Matic, Inc." New Name of Revived Firm in New York

About three years ago Charles W. Yerger bought out the Lupomatic Tumbling Machine Co., assumed the presidency and changed the name of the company to Lupomatic Industries, Inc. At the same time a completely new policy was adpoted, the objective being to develop new types of tumbling equipment, new compounds and new processes. In addition, manufacturing, operating and management policies were completely revised in order to insure prompt deliveries and a product of uniformly high quality.

Shortly after this complete reorganization was accomplished, the trade name Tumb-L-Matic was adopted for these improved products and processes. It has now been decided, in order to insure the continuance of the policies introduced by Mr. Yerger, to capitalize on the success of the Tumb-L-Matic processes, equipment and supplies, and to avoid confusion with the previous company, to give the reorganized company the Tumb-L-Matic name. The company will now be known as Tumb-L-Matic, Inc., and continues at 4510 Bullard Ave., New York 70, N. Y.

No. 1 of a series depicting method for perfect wood finishing with Sundstrand Sanders.

How to simplify, speed White Sanding . . .

get a perfect job every time with a Sundstrand Sander

Leveling, removing press marks and other defects resulting from assembling and handling is quickly done with a *Straight-Line Action* Sundstrand Air Sander. A perfectly flat, level surface results to give you an exceptionally fine foundation for subsequent finishing coats. With a Sundstrand your White Sanding is done quickly, smoothly and practically without effort. Contact your local supplier or write today for useful wood-finishing information.

SUNDSTRAND

SUNDSTRAND AIR SANDERS

SUNDSTRAND MACHINE TOOL CO.

PNEUMATIC DIVISION, ROCKFORD, ILLINOIS

SUGGESTION!

We quote the following letter with the manufacturer's permission.

DeBurgh Conveyors
1741 K St. N.W.,
Washington, D. C.

November 28, 1950

Gentlemen:

Enclosed our check in accordance with our out of court settlement.

We were advised by conveyor people, whom we considered responsible, that we would not be infringing on your patent with the installation we made.

When our patent attorney advised making a settlement with you we were greatly surprised. We do not want to be in the position of infringing anyone's patent.

While we cannot say we like to pay a penalty, we do appreciate your reasonableness.

Yours truly
(Signature will be supplied on request)

We suggest you do not be mislead by statements that a floor type conveyor does not infringe our patent. We recommend that you consult a good, reliable patent attorney before purchasing.

Imitation is the sincerest form of flattery and DeBurgh Finishing Systems lead the field in achieving the utmost in labor, space and in-plant inventory. Find out NOW what a DeBurgh System can do for you.

Investigate!

DeBurgh Conveyors

Patented and Patents Pending

For Assembly, Finishing and Upholstery

1741 K St., N. W., Washington 6, D. C.

diversity

As there is a diversity of poses which a model can assume, so is there diversity in the finishes we develop. In short . . . we produce a wide variety of decorative and protective coatings that are specially-made to give products individuality and genuine sales appeal. When you want a finish that is different . . . superior to run-of-the-mill, pick-it-from-stock coatings, contact our Creative Studio. Our experienced staff of artists will conceive the very finish your merchandise needs to increase its salability. Reputable firms are invited to have samples finished at no cost or obligation.

No Tampering with Quality

ROCKFORD VARNISH *Company*
ROCKFORD, ILLINOIS
Manufacturers of Protective and Decorative Coatings

Affiliate
GORDON BARTELS CO.
Roller Coating Specialists

Can Supply White for Dials

With reference to the Letters from Readers, Nov. 1950 issue, we are interested in the inquiry signed "X., Geneva" on page 88. Would you please forward our name, Lacquer Corp. of America, 857 Meeker Ave., Brooklyn 22, N.Y., as manufacturers of White Enamel for Bakelite Dials? —*L.C.A.*

In a letter, we are giving you the full name and address of the firm in Geneva, Switzerland.—*Editor.*

"Coastal Finish"

We are interested in the Coastal Finish for transformer tanks, as described in November 1950 issue of *Industrial Finishing*. We are interested in knowing if these finishing materials are for sale. If so, we would like to evaluate them for a job requiring unusually good exterior exposure properties in the protection of iron and steel.—*B.M.I.*

In a letter we are giving you the names of Westinghouse's suppliers of industrial finishing materials, as revealed to us confidentially by the Public Relations Department.—*Editor.*

Flock Coating Adhesives

We are seeking to manufacture flock coated fabrics and paper. Our machine is an English one and appears to be mechanically suitable, inasmuch as it distributes, over the fabric and paper, an even layer of flock which is beaten into the adhesive to form a suitable pile. However, we have experienced great difficulty in finding a suitable adhesive and in view of the fact that your journal has contained articles on flocking, from time to time, we are hopeful that you may be able to give us the information we need.

We desire to be put in contact with experts in the manufacture of flock coated fabric and paper who are prepared to supply information as may be necessary from time to time. We are, of course, prepared to pay such a consultant, but he really must be an expert in this field.

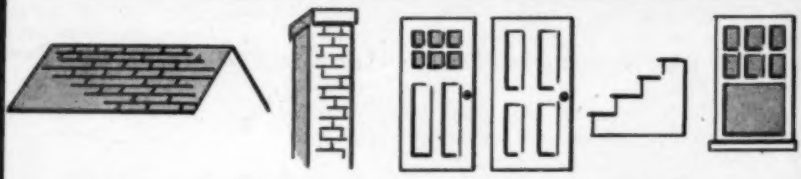
We are able to obtain a dollar allocation for the purpose of importing suitable adhesives. We expect our requirements of the adhesive to be considerable.—*C.T.P. Ltd., Melbourne, Australia.*

In a letter we are giving you the names and addresses of several suppliers of flock adhesives. Also, the name and address of one individual who might be available as a consultant on flock finishing.—*Editor.*

Luminous Paint

Your company has been referred to us by the local dealer of DuPont paints as a possible source of information of where to obtain some special luminous paint.

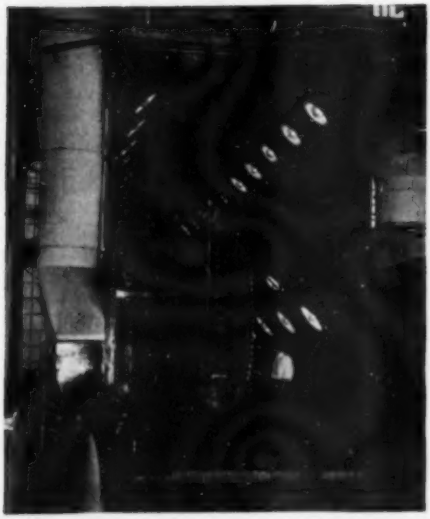
We need a luminous or phosphorescent paint for outdoor use—one that can be noticed in the darkness of the night. It can be luminous either by



YOU WOULDN'T BUY A HOUSE THIS WAY

. . . so why buy a Finishing System piecemeal ?

KOCH'S SINGLE RESPONSIBILITY



Assures A More Satisfactory Job

When KOCH handles your finishing system there's a perfect dovetailing of all production details -- from raw materials to the completed installation.

This coordination -- as executed by KOCH -- assures you a job that's started on schedule, finished on schedule, and with results that keep paying you dividends for years to come. Let a KOCH engineer review your problem now.

Phone, Wire or Write Today!

GEORGE KOCH SONS, INC.

EVANSVILLE, INDIANA

placing a black light in front of it or any other dark light rays. These paints are commonly used on stage sets illuminated by some kind of violet or black light.

We would appreciate very much if you give us the names and addresses of different manufacturers of these products. If you don't know the names of any manufacturer, please inform us where you think we can get information about them.—*R. A., Santurce, Puerto Rico.*

In a letter we are giving you the names and addresses of several suppliers.—*Editor.*

Bouquet to Rewrite Editor

I have just received my copy of December issue of *Industrial Finishing* and read with considerable interest the article on hot spraying lacquers. I wish to compliment you for the way you changed the article around and the way you condensed it to bring out the high points. The way you rewrote it, the important points are very effectively emphasized and not buried with a lot of minor details.

It is my sincere belief that this subject will be of great interest to many of your readers . . .

I would like to have extra copies of the December issue of *Industrial Finishing* to pass out to all of my top salesmen. We could easily use a dozen or more copies. Congratulations again on your fine presentation.—*James A. Bede, President, Bede Products, Inc.*

Screen Stenciling Machines

We would like to get names and addresses of manufacturers of the McCormick and the General Presses mentioned and described in an article entitled, "Silk Screen Stenciling Becomes a Mechanized Process", as published in the November issue of *Industrial Finishing.—K. Sled Co.*

Information supplied by letter.—*Ed.*

Odorless Paint Wanted

We have noted from a Swedish newspaper that a new paint has been developed in the United States, and that this paint has certain advantages compared with usual paints and enamels.

As a matter of fact, the main advantage is that the new paint dries without any smell at all which makes it possible to apply the paint, for instance, in a hospital without having to close down the part being painted. We are interested in this new product. . . .—*Aktiebolaget, Unic., Stockholm, Sweden.*

We believe that several concerns in this country produce odorless paints. In a letter we are naming a few of them. Note to U.S.A. paint manufacturers: We will appreciate hearing from those who have odorless paints for sale.—*Editor.*

New Spray Coating System

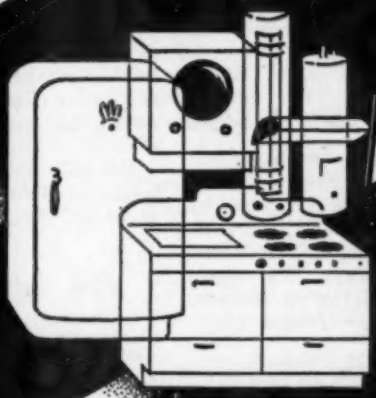
We should be glad to know whether you are already aware of a new spray coating system about which we have heard rumors through clients, this system being constituted by superposed rolls which afford for a small jet, without wasting any thinner or reaching large zones around.

We would like entering into contact with manufacturers of this new apparatus. Should it be a useful novelty and if you are in a position to supply us with ample information and even quotations, please do it without

New ALL-AROUND champion . . . . . .

SUPERIOR COLOR RETENTION

IMPROVED ADHESION



MAR RESISTANCE

MORE MILEAGE

EASIER HANDLING

EXTREME TOUGHNESS

VERY ATTRACTIVE PRICE

H22 BAKING WHITE enamel

. . . . . scores well on all points. A perfect answer for simpler purchases and faster, more versatile production.

ANDREW BROWN COMPANY

5431 South District Boulevard, Los Angeles 22, California — Laurel, Maryland

Irving (Dallas), Texas — 1221 East Pike Street, Seattle 22, Washington

delay. Waiting your news, we remain, with thanks,—*A.R.D.S., Lisboa, Portugal.*

We are not sure of what you have in mind—roller coating, flow coating, electrostatic spraying, hot spraying, steam spraying. There are new developments in all of these. Or is it something else? Does some reader recognize what this inquiry refers to? —*Editor.*

Interested in Tumbling Process

Please send us tear sheets or reprints of the article, "The Technique of Finishing Small Wood Turnings by Tumbling". We understand this article was featured in April 1950 issue of *Industrial Finishing*. We would appreciate your invoicing us for any charges involved.—*Roto-Finish Co.*

Reprint sent.—*Editor.*

What Removes Car Static?

I have just read the "Random Comment" in November *Industrial Finishing* and am particularly interested in the item referring to the use of a strip of Neoprene on passenger cars for the elimination of static in radios. Would you please be so kind as to advise me where I could obtain same? —*S.S.*

This is a product of the Rubber Chemicals Division of DuPont Co., Wilmington, Dela.—*Editor.*

Tumbling Machines

We are interested in obtaining tumbling machines and would like to know if you know of anyone who manufactures these machines. Could you kindly forward to us the names and addresses of such manufacturers?—*S. Co. (Educational Toys).*

There are several such companies. In a letter we are giving you their names and addresses.—*Editor.*

Fluorescent Screw-in Bulb

Please send further information as to where I can procure Lite Mite fluorescent screw type bulb, as illustrated in November *Industrial Finishing*, on page 128.—*M.A.C.*

Several others have made this same inquiry. Write Stocker & Yale, Marblehead, Mass.—*Editor.*

Fire Extinguisher Service

Organization of a nation-wide system of depots has been completed by the Pyrene Mfg. Co., Newark, N. J., makers of hand extinguishers and other fire-fighting equipment.

Certain extinguishers that can be repaired may be turned in for immediate replacement by the service depot with factory rebuilt extinguishers. Without this service the owner would either need to purchase extra extinguishers or be without this protection while extinguishers were undergoing repair. It also assures him of factory-quality rebuilding.

Common replacement parts for various types and sizes of soda-acid, foam and cartridge-operated water and anti-freeze types are now carried in stock.

O'Donohue Sales Co. Milwaukee Moves to Larger Quarters

The O'Donohue Sales Co., Milwaukee, Wisc., distributors of Industrial Finishing Supplies, announces removal of its general offices and laboratory to larger quarters at 2326-28 W. State St., Milwaukee. Warehouse locations of the firm remain unchanged.

The addition of J. O. Husting to the Sales and Technical Staff has also been announced by Mr. C. F. O'Donohue, President of the firm. Mr. Husting, a graduate of Marquette University School of Chemical Engineering, was Plant Engineer of the Ogden Utah Plant of Solar Corp. prior to joining the firm. Mr. Husting's experience in the field of Electro Chemistry will be utilized in his new positioon in Sales Engineering and Product Research and Development.

PROTECTION !

AND

The Furniture Industry, January 15, 1951
Anywhere,
U. S. A. and Canada

Gentlemen:—

For more than a quarter of a century we have manufactured and installed FLOOR TYPE conveyors in over 3,300 furniture production and finishing departments. We are the ORIGINATORS of FLOOR TYPE conveyors.

Our systems built exclusively for the furniture industry, during the past twenty-five years, are the envy of those people whose only hope is to try to imitate us.

Here is your protection from the ORIGINATORS of FLOOR TYPE conveyors. For furniture plant installation Patent protection refer to our U. S. Patent No. 2,517,371 and copyrights No. 20,196 to 20,251.

Sincerely yours,
BALSA, INC.
New York, N. Y.

PERFORMANCE !

For a quarter of a century Balsa has confined its design and engineering talents and production facilities to systematization and conveyorization in the furniture industry. During this period over 3,300 installations have been designed, engineered, built and installed. Here then, is the background of experience which is your guarantee of satisfactory and profitable performance. Among the rewards for years of Balsa's performance plus, are expressions of satisfaction from hundreds of manufacturers, a few of which have been published in this publication.

Development Engineers and Designers of Original Furniture Conveyor Installations

BALSA, Inc.

122 EAST 42nd Street, NEW YORK, N. Y.

Can Plastic Doll Legs be Tumble Finished?

We are sending you two doll legs. We desire to lacquer finish the green leg to or as near as possible the same color as the flesh pink leg. The shortage of acetate butyrate molding powder prompts us to do this. Because of the quantity, facilities required, and labor, we would like to stay away from the dipping method if possible.

It was said of Thomas Edison that he attributed his success to reading all he could on a given subject for three months and then, by 95% hard work and 5% brains, he accomplished what he did.

So far we have "struck out" here, that is, in our search for information among the manufacturers of lacquer, as they know nothing on the subject of art.

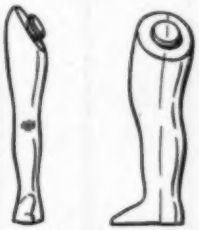
1) We seek your help if you could put us in contact with anyone in the east who is now tumbling anything of a similar nature.

2) Perhaps you could put us in touch with a manufacturer of paint who would supply the lacquer and directions.

3) Any tear sheets of articles that you may have printed on the subject or a bibliography that you could recommend would be appreciated.

Approximately 12 issues of INDUSTRIAL FINISHING were loaned to us. It is our desire that we receive monthly copies of our own. Any help or suggestions toward the solution of our problem will be appreciated.—*R. Mfg. Co. (in California.)*

It is practical to tumble these doll legs, and such enameling (not lacquering) on plastic products is sometimes done by button manufacturers. The curved shape of the legs should produce only minute contact marks as they lay against each other in drying trays—an advantage over flat articles.



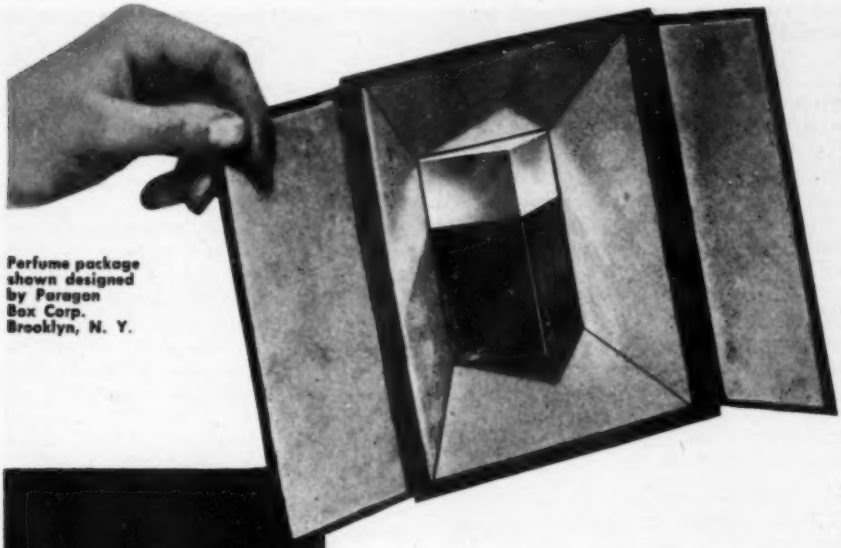
Some of the plastic legs for dolls are slightly more than 2½-in. in length. The finished surfaces must be perfectly smooth to the touch.

Spray-Tumbling

Normally, lacquer is not considered a tumbling material, as its set-up time is too quick. Coated pieces get gummy and stick as the lacquer thinner quickly evaporates in tumbling either wood or any other material. In the case of this present plastic, I also find that lacquer thinner tends to slightly soften the surface. This is only temporary and does not appear to be serious unless other parts are tumbled later, having more detail, which might be affected.

If lacquer is insisted upon—and lacquer certainly does have an individual smooth velvety-soft appearance compared to the "shine" of enamel—I suggest the following simple try-out:

Saw a wooden barrel in half to make a tub and mount it on a slant, (tilted, with open side up) slowly re-



Perfume package shown designed by Paragon Box Corp. Brooklyn, N. Y.

PAPERBOARD FINISHED WITH

CLAREMONT *Flock*

PRODUCES BETTER PACKAGES

The tiny Claremont Flock fibres amassed as Velour Paper surfacing, possess a beauty that is more than skin deep. They form protective walls, serve as cushions, reduce handling shock and frame the product safely on all sides or thru deep-set recesses as illustrated in the perfume bottle package above. Contact your paper merchant—ask him for samples of Velour Papers. The best, most colorful and most practical are those surfaced with Claremont Flock!

CLAREMONT WASTE MFG. CO.

The Country's Largest Manufacturer of Flock

CLAREMONT, NEW HAMPSHIRE

volving, so you can stand and watch a peck or two of the toy parts cascade by. Spray them with colored lacquer thinned down for a comparatively low pressure spray gun. Apply only a light coat, bearing in mind the sticking trouble that makes lacquer impractical for tumbling may appear at any moment. Stop the barrel for a short time between coats and hold back from too plentiful application which can easily happen by spraying.

Consider this lacquer application by spraying-tumbling (you will get nowhere by merely "dumping" lacquer in—the usual way of adding tumbling materials) as a lacquer experiment, but keep this open-end tumbler in mind for more practical use, as will be mentioned later.

Use of Tumbling Enamel

These plastic doll legs should tumble well with tumbling enamel. Use a regularly constructed tumbling barrel, applying lead-free or non-toxic toy enamel of preferrably the synthetic type for extra fast dry, brilliance, smoothness and toughness. Ordinary tumbling enamel would also be all right, as you probably have heat for baking. For room air-drying, I suggest, in this case, using the synthetic. The VMP (Varnish Maker's and Painter's) naphtha used for the slight thinning of the enamel will not damage the plastic surfaces. Neither is any tumbling with bits of sandpaper or lump pumice necessary to dull the surface, as the legs will take enamel as they are.

With no porous surface and no absorption on these plastic legs, the first coat should start right in with the enamel. There is no need of a primer, filler, sealer, undercoat or "flooding" a lot of material on, as in the case of wood. Thin the enamel slightly with VMP naphtha and pour in only a few tablespoonfuls of the mix to the approximate two pecks of parts. Run only until all parts are covered and then dump into trays to thoroughly dry.

After this first thin coat the parts will need a second, a third and possibly a fourth coat, as *we are applyiny the enamel very sparingly. These extra thin applications are to maintain smoothness and only pin-point blemishes or contact marks.* The usual three coats may go to four, as we are covering a dark color (green) with a light one (flesh color).

This process is the usual tumbling method of finishing without any particular precautions, and the parts should stand abrasion without chipping after they are finished. *Very little material, and short runs each time, should build up smooth coats that will hold.* Syntehtic tumbling enamels have some features in common with all synthetic enamels, and probably you will be able to obtain the exact lead-free flesh color shade you want from your nearest paint manufacturer. This manufacturer will, of course, be familiar with synthetics and if he has to make it special he will, no doubt, give it a short quick set-up for tumbling in preference to the longer, oily flow required for dipping.

Tilted Open-End Barrel—and Lightly Spray Material Into It

I have suggested that the first half-barrel or wooden tub idea be kept in mind, as it would be helpful since you are probably unaccustomed to product painting but are forced, by shortages, to coat plastic parts. Normally, a tumbling barrel revolving on a horizontal shaft, with a closed trap door, performs its work of coating the parts while they are out of sight. With the open end barrel you can see what is happening. Furthermore, *I believe you will gain by using the spray gun application with enamel instead of merely dumping it in from a container.* The spraying will give instant over-all smooth coverage as the

Let this be our problem
. . . NOT YOURS
Government Revises Finish Specifications
WASHINGTON
We'll put the Experience of Two World Wars to Work!
● Meeting government finish specifications is only part of the Glidden Industrial Finish story. Equally important is Glidden's long experience in furnishing these finishes to meet your specific application and drying requirements.
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parts tumble by and the thinness of the coat can be easily watched, and the run stopped at the right time.

Please keep in mind that once the parts are lightly covered, there is no object in tumbling them further. Sometimes operators who get on too much enamel will let it run a little to "roll it down" or hopefully get rid of the excess. Too little enamel, however, will do no harm beyond requiring an extra coat. This is tumbling with the suggested variation of applying the enamel by spraying. Many firms are already doing this with tilted open-end tumblers. There is no reason why other plastic parts of the doll could not be finished the same way.—*E. G. Sederquest, Burgess, Fobes Co.*

DeVilbiss Offers Free Course in Industrial Spray Painting

Starting the 26th year of operation of its school of Spray Painting, the DeVilbiss Co. announces the schedule of courses for the first half of 1951. Conforming with its established policy, no charge is made for instruction. Enrollees pay only for meals and lodging while attending the school. Users of DeVilbiss equipment may make application now to enroll their spray operators and finishing department supervisors for any of the one-week courses offered.

On the eve of the company's 63rd year of manufacturing spray equipment, they also announce the completion of a modern new building for all customer service facilities. Not only will the new structure provide large quarters for the spray finishing school, but it will also afford ample space for display and demonstration, plus a complete customer research division to which may be submitted problems on all phases of spray finishing and spray equipment installations. The new school and research building, now open to visitors at the main plant in Toledo, is located directly on Highways 24 and 25.

The Training School schedule for instruction in industrial methods offers classes starting February 5, March 5, April 2, May 7 and June 4. Applications should be made as far in advance as possible. Information about the school, or concerning classes for the latter half of 1951, is obtainable from the DeVilbiss Co., Toledo 1, Ohio.

Optimus Purchases Rights of Circo Products

The Optimus Equipment Co., Matawan, N. J., has purchased the trademarks, patents, sales rights, etc., of Circo Products Corp., Cleveland, Ohio, manufacturer of metal parts cleaning and degreasing machinery.

The Circo manufacturing operations are being moved to Matawan where the manufacture and sale of Circo equipment and degreasers will be carried on as the Circo Division of Optimus. The present Circo distribution set-up will be continued and expanded.

Optimus manufactures metal parts washers, vapor degreasers, dryers and pickling machinery for the industrial field.

Optimus Equipment Co. is a subsidiary of Hanson-VanWinkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies.

Field Service Representatives from the Canadian, New England, New York, St. Louis and Southern Divisions of Oakite Products, Inc., are at the annual conference held recently to discuss technical-sales aspects of modern industrial cleaning and allied operations.

Specialists

in "SPECIAL" FINISHES for 50 YEARS

Customer confidence is our stock in trade and the mainstay of our business. At KAY & ESS top management meets each customer personally and considers 'his' order of personal importance We work hand in hand with our customers, bend over backwards for them and do the 'almost impossible' when the need arises During our 50 years, over 40,000 individual formulae have been developed and hundreds of thousands of manufactured products have had more salability, more durability due to the fine quality of our Special Industrial Finishes. We welcome your inquiries write to

THE KAY & ESS CO.

KISER and LEO STS., DAYTON 4, OHIO

VARNISHES, JAPANS, LACQUERS and ENAMELS for INDUSTRIAL USES

Random Comment on the Industrial Scene

(Continued from page 7)

sign, created what was termed the "most promising" model in the company's new line.

Elgin is working with a number of free-lance designers in an effort to develop native American watch styles that represent both traditional and contemporary approaches.

* * *

Inspection of Metal. Dy-Chek, the Dye Penetrant Method of Inspection, simplifies non-destructive testing of any metal, and produces real economies in the cost of inspection. The Dy-Chek process is fast, cheap, accurate, portable and license-free.

Early discovry of faulty parts gives time for salvage procedures or discarding the part before so much time and money have been spent on it.

* * *

Cut-Out Couplings. A new automatic device for processing equipment, conveyors, etc., instantly shuts off the power when an overload due to any cause occurs and resets itself automatically, preventing sheared pins, and saves the time normally required to replace them.

The new cut-out coupling is manufactured by Anchor Steel & Conveyor Co., 6906 Kingsley Ave., Dearborn, Mich. It combines the feature of a flexible coupling with the torque-sensitive protection of the Anchor cut-out pulley.

* * *

Hardens Without Air. A material that remains liquid as long as a stream of air bubbles through it, but which hardens in a few minutes when away from air, has been developed in the chemistry division of the General Electric Research Laboratory. This new material is able to penetrate extremely small cracks before hardening. A possible application is a tight seal for stopping nearly invisible leaks, or a "pipe dope" for sealing threaded unions, or treatment to prevent a threaded nut from working loose.

The substance is called, "Anaerobic Permafil". When two metal strips are coated lightly with it and clamped together the joint will support 10-lbs. after ten minutes. After 20 hours, it will hold 100-lbs. If still faster hardening is desired, the "Permafil" may be heated up to 212° F., and solidification takes place in a minute or less.

* * *

Belt Conveyor Booklet. B. F. Goodrich Co., Akron, Ohio, has just issued a new 26-page catalog section which portrays in detail all major parts used in the construction of its line of conveyor and elevator belts.

* * *

Emergency Exit Light. A new automatic emergency exit light will assist in the safe evacuation of premises if the regular source of current fails. Under normal conditions the unit operates in the same manner as any ordinary exit light. If the regular source of lighting power fails, the exit light will operate instantly and automatically from power furnished by batteries within the unit. The emergency feature also furnishes a

If power current fails a battery takes over.

Now... a basically new RESIN

with 1. OUTSTANDING ADHESION
2. HIGH CHEMICAL RESISTANCE
3. UNUSUAL FLEXIBILITY

EPON® RESIN

EPON Resins offer surface coating manufacturers a combination of properties never before commercially available in one resin.

Check these advantages:

1. **Outstanding adhesion** . . . and toughness. Even zinc die castings can be finished with one coat of EPON Resin enamel *without a primer.*

2. **High Chemical resistance** . . . unexcelled by *any* other resin in resistance to detergents, caustic, many acids and stain producing materials.

3. **Unusual flexibility**. . . coupled with extreme hardness in both air-dried and baked films. EPON Resins improve the quality of vehicles and enamels . . . simplify formulation and processing.

Attach the coupon to your letterhead and mail, for specifications and application data on EPON Resins. Samples are available for your own evaluation.

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Company _____

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LACQUERS — Available in clear and opaque, for application to surfaces of all kinds. Spread easily and give good coverage. Any sheen desirable. Attractive, outstanding finishes.

SEALERS — Ideally suited as first coat materials under clear gloss or flat lacquers. Give good body and sand easily. Also, work well under varnish and enamel! Try them!

VARNISHES — None better! Whether for dull, satin or gloss effects, Mac's varnishes will be found most economical and appropriate as finishing coats on low, medium and high priced goods.

STAINS — These are stains of distinction, with an established reputation for the highest quality. We've been making them since 1875. Mac's stains can be supplied for every need.

FILLERS — The Mac's Fashion line includes the more commonly used oil paste fillers as well as the quicker drying materials of recent development. Keep abreast of the times with Mac's fillers.

PRIMERS — Mac's Fashion primers insure full coverage and absolute protection as first coaters on metal, forming firm and lasting foundations on products subject to severe treatment and abuse.

ENAMELS — For wood, metal and other surfaces, air dry or bake. Mac's Fashion enamels, properly applied, stand up under all conditions to which painted articles are subjected.

WOOD BLEACH — Mac's Fashion bleach will bleach all kinds of wood including mahogany. Dries overnight to a definite bleached effect ready to sand, and ready for the regular finishing schedule. Samples on request.

THE LAWRENCE-McFADDEN CO.

Write for Production Test Samples

7430 STATE ROAD PHILADELPHIA 36, PA.

Headquarters for Fine Finishes Since 1875

powerful downward beam to illuminate the floor area. The unit will furnish about eight hours of emergency light from a standard dry battery. A product of Electric Cord Co., 30 Church St., New York 7, N. Y.

* * *

Employee Education. An employee program inaugurated by SKF Industries, Inc., a year ago is being continued by the ball and roller bearing firm because of the success it enjoyed in the first year of operation. About 150 factory workers are enrolled in after-hours classes in eight courses that will require from 10 to 20 weeks for completion. The program, which has gained wide attention, is wholly supported by the company.

In the first year of the unique industrial relations experiment, 222 non-supervisory employees were awarded "diplomas" for successfully completing courses comparable to those given in many technical schools and colleges.

* * *

Rare Cabinet Woods. Several rare cabinet woods will soon be available to furniture manufacturers. The magazine "Compressed Air" reports that a French concern has built a sawmill and logging camp in the French Cameroon in Africa. The woods include ekki (or bongossi), atomn, aszenia, iroko (or roko), apara and mahogany.

On the same subject, there is a wood called Ohai, (or monkey pod) which comes from Hawaii. It is said that the volcanic soil there is responsible for the unusual golden brown and dark brown tones of the wood.

* * *

New Resin for Paint for Metal. A new line of synthetic resins known as "Epon" has been developed. Paint formulated with these resins has a particular affinity for metals; the film is flexible and will resist chemical attacks. Paint made with these resins is especially adapted to machine tools, office and dairy equipment and home appliances. The flexibility of the film makes the paint useful in coating metal products such as bottle, jar and can closures and shaped metal products which are formed, rolled or crimped after finishing.

The chemical resistant properties make it useful in coating tank cars, refrigeration and air conditioning equipment.

Chemco Products Name is Changed to Pelron Corp.

Pelron Corporation is the new name of the concern formerly known as Chemco Products Co., Inc., 7740 W. 47th St., Lyons, Ill. This company manufactures industrial chemicals used in metal finishing and processing industries and invites inquiries in reference to cleaning, phosphating and paint removing problems.

Factory Layout Planning Kit

Designed to demonstrate the values obtained from 3-dimensional planning, "Visual" Planning Equipment Co., Inc., Pennsylvania Ave. and River, Oakmont (Allegheny County), Pennsylvania, is intrducing a 200-piece kit of machines, benches, trucks, conveyors, materials-handling equipment, office and toilet equipment, together with a 12x18-in. lucite planning board, columns and layout tape.

The planning kit will enable the user to test the merit of this type of planning before accepting or rejecting its values.

U.S. Civil Service Jobs Open

The United States Civil Service Commission has announced an examination to fill the positions of Business Analyst, Commodity-Industry Analyst, and Industrial Specialist paying from $3,450 to $6,400 a year, in various Federal agencies in Washington, D. C., and vicinity.

Full information concerning the requirements to be met is given in civil service Announcement No. 259 which may be consulted at most first or second-class post offices. Application forms may also be obtained from these offices, from civil service regional offices, or from the U. S. Civil Service Commission, Washington 25, D. C. Applications will be accepted by the Commission's Washington office until further notice.

Materials Supplies Equipment

Spraying Paint With Superheated Steam

A complete line of equipment for spraying paint with steam, including a new spray gun using super-heated steam instead of compressed air, has been introduced by the Kellogg Division of American Brake Shoe Co., 97 Humboldt St., Rochester 9, N. Y.

Steam spraying is a revolutionary new process developed and recently patented by E. I. duPont de Nemours. The use of dry, super-heated steam as an atomizing medium serves to heat the finishing material, making it possible to use materials of higher viscosity. This allows the application of heavier coats without sagging or running. The difficulties of pinholing and poping, normally caused by entrapped air, are reduced.

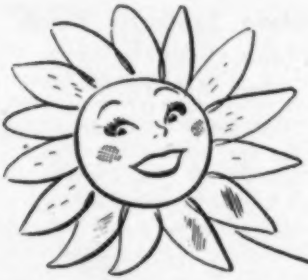
Because of the characteristics of steam, finishing material savings of 10% to 20% can be expected in most applications through the reduction of overspray and atomization losses. In addition, savings in solvents and thinners are realized through the use of finishing materials higher in solid content.

In many cases the material thickness per coat can be substantially increased by steam application. This, plus fewer cleanings of the spray booth because of reduced overspray, can lead to substantial labor savings.

The steam spray process is now being used by large manufacturers with finishing assembly lines, and others are currently experimenting with the process. The greatest merits of this new method are realized in continuous, high volume finishing operations.

Equipment required for the process may be installed at moderate cost. A source of steam of not less than 100 pounds per square inch is required. If steam is unavailable the steam may be furnished by a small steam generator. Appropiate steam spray guns, separators, strainers, traps and regulators are needed, as

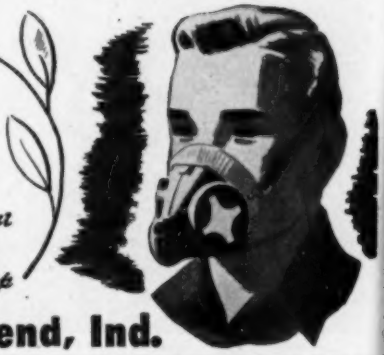
Operator uses steam spray gun and equipment to paint water heater tank on assembly line of large appliance manufacturer.



BE FRESH!
STAY FRESH!

for Dust Protection
wear a DUPOR No. 4

The ideal twin filter respirator to keep sawdust, silica dust, grinding compounds out of nose—throat—lungs! A favorite protection for paint spray, fumes, gases, vapors, etc. Rubber face mask provides airtight fit, controlled breathing, panorama view, no blind spots.



COVER'S GAS-TIGHT FOG-PROOF GOGGLES **$1.85**

Sample sent $1.85 pp

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CONSIDER SILK SCREEN PRINTING . . .

Almost any product, from tractors to ash trays, can be marked directly, quickly and attractively. Economical for large and small designs in any quantities. Silk screening gives clear sharp detail and a tough permanent finish that withstands handling, abrasion, outdoor exposure.

We have photographic plates, stencils, inks, lacquers, enamels—everything you need for silk screen work. A silk screen department costs very little to set up and pays for itself many times through faster production.

Write Department IF 1-51 for further information

Naz-Dar Company

469-483 MILWAUKEE AVE., CHICAGO 10, ILL.

Close-up of Kellogg's new steam spray gun.

well as a superheater to dry the steam by raising it to the proper temperature.

The S-100 steam spray gun, shown in the accompanying pictures, was developed by Kellogg to meet the unusual requirements of steam spraying. New insulation and radiation design features dissipate the heat caused by hot steam in the gun, enabling the operator to use the gun comfortably with bare hands. Hose supports for steam and materials reduce the downward torque on the spray head, making it more easily balanced and less tiring for the operator. Other features include a built-in finger guard, an adjustable fluid needle, and a spray head with one piece, easy-to-clean steam cap and fluid nozzle.

Further information on the process or any of the equipment required, as mentioned in this article, may be obtained by writing to manufacturer.

Non-Glare Synthetic Finish

A new plastic synthetic finish, VB 248, that was developed to permit dulling the reflecting surfaces of stainless steel in guided missiles, aircraft instruments and other apparatus, has been announced by the United Lacquer Mfg. Corp., Linden, N. J.

The new finish provides an effective coating that adheres to the highly polished stainless steel used in various aircraft devices.

VB 248 was develpoed originally in black and in a dull finish but, because of its excellent adhesion to highly polished surfaces, it is expected to find other applications where elimination of glare is not the primary objective. In such cases, the new synthetic material may be prepared in all colors, in a semi-gloss or gloss finish. VB 248 takes a baking temperature of 275° F. for one hour.

"Plextone", a Multicolor Finish

Through the use of "Plextone" a new multicolored industrial finish, it is now possible to spray a product with two or more colors simultaneously in a single spray coat. This work does not require special spray equipment nor special techniques; the multiple colors exist separately within the Plextone finish. They do not merge nor blend. Upon being sprayed they create an interlacing color network which is extremely pleasing to the eye.

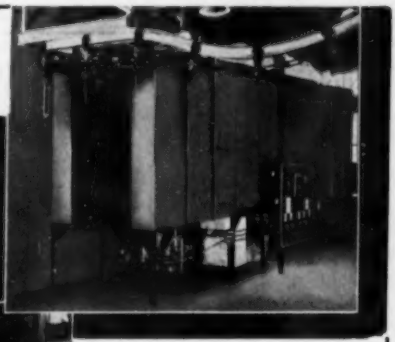
Preliminary preparation of many types of surfaces is reduced in cost or eliminated, thereby lowering the total finishing cost.

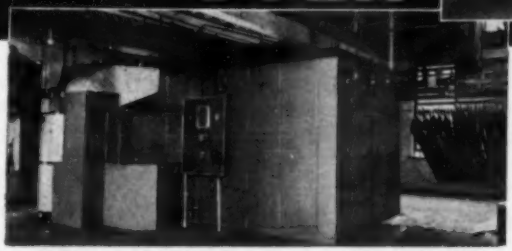
The Plextone coating resists chipping, cracking, abrasion. The color pattern tends to conceal surface flaws and imperfections. It withstands numerous washings with soap and water.

Plextone finish is offered in a number of Plextonized solid colors which may be intermixed by the user, as

for efficient straight-line production—get a

LANLY CONVEYORIZED OVEN





Lanly experience embraces the designing of many such ovens for a large variety of purposes.

A letter or phone call will make our counsel available without obligation. Write for literature.

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Quality LACQUERS

We can save you money on lacquers and lacquer thinners . . . made to your specifications or ours (and under your label or ours) . . . because of our nearness to sources of raw materials. May we send you our price list?

COAST PAINT & LACQUER CO., Inc.
P. O. BOX 1113 HOUSTON 1, TEXAS

desired, to form an infinite variety of Plextone color combinations, or may be ordered pre-mixed at the factory. Beautiful new color effects can be achieved, including simulations of marble, granite, leather, cork, etc.

The preparation of Plextone combinations is simply a matter of mixing solid Plextone colors together and stirring gently. No special equipment is required. Standard spray equipment may be used to apply it.

Zolatone, Inc., originators of "Plextone", has appointed Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N. J., sole manufacturers and distributors in the east and mid-west, under license to produce this product under patents pending.

"Solvojet" Cleans Small Parts

The Phillips SolVoJet is designed for doing safe, rapid and thorough cleaning of small products. Because the SolVoJet handles petroleum, emulsion and light compound solutions, as well as toxic and non-toxic solvents, any new cleaning problems are overcome quickly by recharging the unit with the proper solvent. This flexibility and the ease of maneuvering the SolVoJet unit to the work assures its varied usefulness and contributes savings through reduced material handling and increased production.

For rapid, thorough cleaning of small parts.

Soil is removed by solvent action at room temperature. The pressure jet required to dislodge stubborn particles is supplied by a carefully selected rotary type pump equipped with mechanical seals. The pump is operated by a foot switch; a conveniently located adjusting valve permits quick regulation of the pressure. The operator is free to work with both hands, one directing the jet of solvent while the other manipulates unexposed parts and surfaces. The cleaned parts are then drained or subjected to compressed air blowoff when complete removal of solvent is required.

This cleaning equipment is a product of Phillips Mfg. Co., 3475 Touhy Ave., Chicago 45, Ill.

Corrosive Resistant Paint for Metal Products

Corrosive action of acids, alkalies and other chemicals on railroad hopper cars and similar equipment is forestalled up to six times as long by a new finish based on Vinylite resins. Test cars painted with this material carried punishing cargoes such as cement and soda ash more than three years. They remained almost completely free of corrosion—even where sledge hammers had been used to break cargo loose. In addition to providing long-life resistance to corrosive effects of acids, soda ash, sulphur, alkalies, phosphate, common salt, and cement, the new finish withstands repeated scrubbing and washing with strong cleaning solutions. It has weather durability and unusual abrasion resistance.

Concentrated acids affect the finish

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AMERICA'S FINEST PADDING LACQUER

Creates new life in wood

- **It is the Modern French polish**
- **Produces a beautiful, rich finish**
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"THE SCIENCE OF WRINKLE FINISHING" (204 pages)	5.00
"THE SCIENCE OF MODERN WOOD FINISHING" (386 pages)	6.00
"PAINT & VARNISH TECHNOLOGY" (509 pages)	8.00

Cash Must Accompany Order—Send for Descriptive Circular

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to some extent, but not so readily as they effect comparatively short-lived conventional finishes. Aromatic hydrocarbons, ketones, esters and some chlorinated hydrocarbons will soften the finish but as long as no abrasion occurs, the film will harden to its original state when allowed to dry. The finish is recommended for use on covered hopper cars, tank cars, tank container cars, refrigerator cars and other equipment subjected to similar rigorous service conditions. It is applied with the same equipment and technique normally used to apply a synthetic lacquer or enamel.

This finish, known as Carclad, is produced by the Sherwin-Williams Co., Cleveland 1, Ohio.

Heavy Tank Lining

The practical application of thick protective coatings for tank and duct linings and for the full protection of equipment and floors is covered in a bulletin on a new coating called Carbo-Kote 6020.

Due to a solids content of 100%, fluid and free flowing during applications, coatings can be applied 12 mils (.012-in.) thick in one application even on vertical surfaces.

Coating hardens at room temperature to very hard protective film, resistant to all acids except oxidizing types, and to practically all solvents and alkalis. While abrasion resistance is excellent, there is sufficient flexibility for steel tank lining service without fiber reinforcement. The coating is non-toxic and non-contaminating.

The new bulletin covers the process of applying Carbo-Kote 6020 on steel and concrete, for which primer coats are required, and on wood, glass, carbon, porcelain, rubber and stoneware, for which no primer is required. A product of the Carboline Co., 7603 Forsyth Blvd., St. Louis 5, Mo.

Spraying Paint by Dry Steam

A process for spraying finishes on products made on an assembly line with steam instead of compressed air, has been developed by the DuPont Co., Wilmington 98, Dela. It is the result of research work started several years ago.

Steam spraying is a revolutionary process; it is claimed to be an economical method of applying coating compositions. It does not necessarily provide a better or glossier finish to the refrigerator or other article being sprayed, but it does effect savings in the manufacturer's overall finishing costs.

The phenomenon involved when superheated steam is released from a paint spray gun is immediate dissipation of velocity energy into the paint and the immediately surrounding atmosphere. There is a minimum of turbulence at the surface of the articles being coated.

Superheated steam used for atomization is dry, and the amount of moisture deposited in the film is insignificant. Constant bleeding of the gun eliminates any condensation which might cause actual drops of water, which would be objectionable.

To insure dry steam at the point of atomization the steam must be superheated. The pressure used for atomization is approximately 60-lbs. per square inch, with superheat at the gun. A bare hand can be placed in the atomized spray fan without discomfort at a distance of about 12-in. from the gun.

Although normal spray equipment can be used for steam spraying, it would be too hot to handle even with gloves. Specially designed heat insulated spray guns have been produced which work satisfactorily on a production basis, and further improvements will likely be made.

DuPont's production experience to date has been largely with alkyd and

alkyd urea formaldehyde type finishes which are widely used in industry today. Laboratory experience, however, indicates suitability for a wide variety of finishes.

The use of heaters for hot spray application is rather widespread. It is gaining in acceptance because of collateral merits. Steam spray refers primarily to the actual process of atomization and, therefore, is useful in conjunction with hot spray equipment.

Although the basic principles of steam spray are comparatively simple, a definite amount of "know how" in addition to the special equipment is necessary to insure fool-proof operation.

The steam spraying process is covered by U. S. Patent 2,511,797, issued on June 13, 1950. Management of Du Pont's Finishes Division plans to offer the process to the public on a license basis. Details have not yet been worked out, but the contemplated royalty will be at the rate of about 1% of the net purchase price of the material applied. The material, incidently, may be a Du Pont finish or that of competitor. Royalties will not start until the license is offered to the public.

Protective and Masking Coating

Spraylat "A" has been used for the past seven years by the aircraft industry as a strippable protective coating for acrylic plastic glass, such as on the canopies of airplanes.

This sprayable water dispersion is now being used by manufacturers of acrylic signs as a masking material. The formed sign is coated with Spraylat "A", the letters are scored on the film with a knife, and the coating over areas to be painted is peeled off. Lacquer is then sprayed on the stripped areas. More letters can be cut and other colors used. The Spraylat film

SPECIALIZATION
Saves You Money

We make nothing but Thinners—blended Solvents, and nothing else. Naturally, we buy large quantities of solvents—at lowest prices. *Specialization* saves us money on overhead too—and these savings we pass on to you, our customers.

We know how to formulate Thinners to your requirements—been doing it for 25 years. We've satisfied big and little customers . . . let us show you how a Lacquer Thinner *SPECIALIST* can supply you with the *right* Thinner . . . and still save you money.

Just fill out form below and mail today. We'll work out a Thinner *especially for you*, and send a sample. Think we can do it for less than 83¢ a gallon too!

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The product we make is:_____

We use Lacquer Thinner for:
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☐ Metal ☐ Wood ☐ Other_____

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☐ Fast ☐ Slow ☐ Medium

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R1935

- Your best bet for mixed metal items—where one lacquer is needed for both metals.
- Adheres to steel, aluminum, zinc die castings.
- Air-dries to handle in 10 minutes.
- Available in metallics and colors.

SEA-LAC

Duralac Chemical Corp.

84 LISTER AVE., NEWARK 5, N. J.

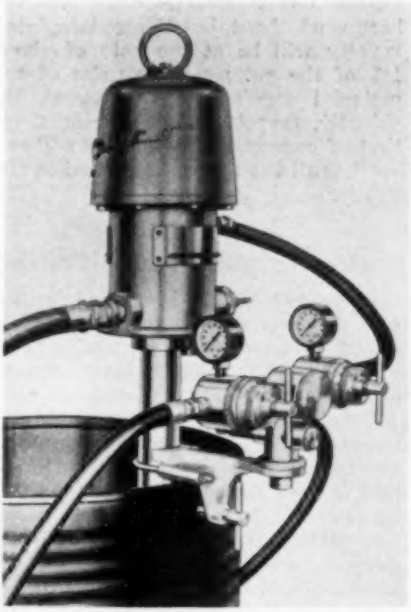
is then stripped, leaving a clean-cut lettered sign.

A similar use is that of masking polystyrene or acrylic television lenses. Besides acting as a mask, this tough plastic film protects these delicate surfaces throughout fabrication and shipment.

Spraylat is a product of Spraylat Corp., One Park Ave., New York 16.

Heavy Materials Sprayed Evenly; No Spurting

Spray gun spurting, which often projects a blob of heavy industrial material upon the coated surface, is completely eliminated by the new Graco Mogul-Type Powerflo Pump. This air-operated, high volume, material handling pump is equipped with a device called the Evenflo which positively prevents spurting. Now surfaces



Pump in position in drum of heavy material.

I. C. D. FORMULA NINE

NON-INFLAMMABLE
« *wax free* REMOVER »

for paint, varnish, lacquer, baked enamel, adhesives

EASY TO APPLY—NO AFTER CLEANING

I. C. D. FORMULA 9 is the standard of safety and quality . . can be sprayed or brushed . . doesn't raise grain nor discolor . . quickly removes all kinds of finishes and coatings from any surface or material . . costs less to use . . saves time, labor and material.

BRUSH CLEANER I. C. D. — non-inflammable brush cleaner works fast . . does not injure nor loosen the bristles. Easy to use . . leaves the bristles clean as a whistle. Order a gallon can and convince yourself.

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INDUSTRIAL CHEMICAL DEVELOPMENT CORP.

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can be coated evenly to meet rigid specifications.

Mogul Pumps—operating in original 400-lb. and 100-lb. drums or in bucket-type containers—supply industrial material through hoses for spray gun, pole gun or extrusion gun application. No transfer operations are necessary.

Extra high volume Mogul Pumps operate within a broad air pressure range (from 20 to 175 psi.), can be powered by air compressors with either large or small output capacities.

Rust and corrosion preventives, calking compounds, adhesives, sound deadners, roofing materials, undercoaters, and many other industrial materials can be pumped rapidly and in large volume with the new Graco Mogul. Even gummy mastics, and other non-self-leveling substances, can be easily handled.

A mogul weighs only 35-lbs. Its power head is cast aluminum. Easily changed O-Rings stop blow-by to provide leakproof seals in air motor. Piston has balanced double action for smooth high volume delivery.

For additional information, write Graco Co., Inc., Industrial Division, Graco Square, Minneapolis 13, Minn.

Develops Lacquer for Molded Polystyrene

After 24 months of research the New England Lacquer Co., Dept 1, King Philip Rd., East Providence, R. I., has produced an improved polystyrene lacquer. It features a high gloss, strong adhesion and bright, long lasting colors—a combination of qualities which has been hard to find in polystyrene lacquers.

Easy to apply, this new lacquer is suitable for spraying, wiping, flocking

NOW! Tack Cloth in Handy Rolls *or* Cut Bulk

Cut off any size piece and use as needed.

Now you can get Tack Cloth packed the way it's easiest for you to use—either in 150 yard rolls of 36" wide cloth or in handy cartons—100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up.

The Cut Bulk size is 18" x 36"—folded to 4½" x 18" for easy handling. All of our Tack Cloth is Spontaneous Combustion-Proof, Lint-Free and Wax-Free. It's clean and sanitary—there's no waste.

Write today for complete information, prices and samples.

Already cut and folded, ready to use.

Baughn Chemical Products Company

"The Tacky Wiper Specialists"

7627 N. RAVENSWOOD CHICAGO 26, ILL.

Also Individually Packed in Glassine Envelopes —144 to the Carton.

A WARRANTY OF SATISFACTION IN EVERY CARTON

and silk screen methods. It is available in clear or in a complete range of colors, and may be obtained in various degrees of gloss. Other features include blush-resistance, excellent coverage and quick-drying qualities.

Further information is contained in a free booklet entitled "New England Lacquer for Molded Polystyrene".

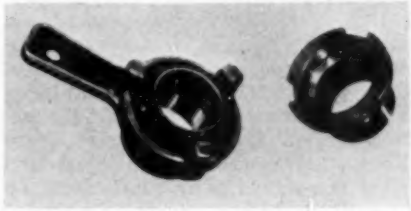
Vinyl Finish Drum Lining

Gates Engineering Co., P. O. Box 1711, Wilmington, Dela., has developed a permanently flexible, pure vinyl drum lining material. The new Gaco Drum Lining has high impact resistance rating and produces a gleaming white, sanitary finish. It is non-toxic and odorless.

Adhesive characteristics insure maximum bonding of the coating with the surface of the container. It will not crack, chip or peel off and so avoids the danger of contents being contaminated through contact with the drum.

Quick Coupling for Fluid and Air Lines

A 2-piece self-positioning quick coupling unit called the J. S. Quick Coupling, said to open and close with



No exposed threads to become damaged.

less than a quarter turn and in less than a second, is announced by the Mead Cornell & Co., P. O. Box 2682, Cleveland 7, Ohio. Consisting of a body with three tapered locking lugs and mating male or female tail piece or hose spud, the J. S. Quick Coupling is available in aluminum, high test bronze, stainless steel, and Ni-Risist. Sizes range from ½-in. upward.

The coupling is said to be shock and vibration resistant due to matching taper on the handle ring locking lugs and tail piece locking flanges. Gasket wear is minimized because the flat tail piece face is pressed straight against the gasket without twisting action and is locked to the gasket under pressure when the connection is made. The gasket is held in place at all times through use of undercut in the body.

Skin Protector & Cleaner

Practi-Kreme is a hand protection cream for industrial workers whose hands are exposed to or in contact with industrial materials and supplies which may cause more or less serious skin irritation and possibly infection. It is not slippery on the hands, does not dry out, roughen or chap the skin or impair the normal sense of touch. It will not affect nail polish.

Free test samples can be obtained by writing George H. Clark & Co., Inc., 181 Commercial St., Worcester 8, Mass.

Prufcoat Metal Reactive Primer for Dry or Damp Metal

Primer P-10 is a moisture and corrosion resistant material which may be applied to damp or dry metal surfaces that are reasonably rust-free and have been degreased. It may be brushed or sprayed. Drying time is 30 to 45 minutes at ordinary room temperatures and humidities. If tem-

WANTED!

5,000 WOOD FINISHERS

to try the improved DETROIT HANDY "TAC" RAG on all surfaces before applying varnish, lacquer or synthetic enamel. They're non-inflammable at no extra cost, ready for instant use, never dry out or harden. *Standard* of your Finishing Industry for 16 years. Ask your supplier today or send for sample.

DETROIT HANDY "TAC" RAG

DETRO MFG. & SALES CO., INC., CULVER CITY, CALIF.

S-Y TRADE MARK Stains

Of utmost importance in achieving a fine finish, Stille-Young stains give satisfactory results. Supplied to the wood finishing industry for years, the Stille-Young line includes stains of every type, to meet any requirement.

Phone—Write—Wire!

STILLE-YOUNG

Manufacturers

CHICAGO 14

ty-d Hand Protector

A Protective Hand Cream Especially Formulated

for . . . Persons handling Polishes, Paints, Varnishes, Lacquers, Stains, Inks and Adhesives.

- Does not irritate, dry or crack the skin.
- Readily removed with soap and water.

FREE!! FULL SIZE SAMPLE TUBE. Write

Compo Chemical Co.
Incorporated
MANSFIELD, MASS.

Distributors Wanted: Good territories open to men calling on finishing field.

PAINT STRIPING TOOL

Works Like a Fountain Pen

FEEDS PAINT TO MAKE CURVED OR STRAIGHT LINES

Simply fill Tubular Glass Paint Fountain with paint or lacquer and Knurled Wheel Tip feeds paint evenly! Tips interchangeable. Master Paint Striping Tool complete with 1/16" tip, $1.00. Other complete tools with 1/64", 1/32", 3/64", 5/64", 3/32", 1/8" widths, $1.50. Extra tips $.75; complete kit with tool and 7 tips, $5.00. Used by industry on production striping. See your dealer or order direct today.

WENDELL MFG. CO.
Dept. 91
4234 N. Lincoln Ave.
Chicago 18, Ill.

USE FOR STRIPING

- FURNITURE • TOYS
- BICYCLES • BOATS
- SCOREBOARDS
- LAMPSHADES
- AUTOMOBILES
- CERAMICS and for adding new beauty to all painted objects.

perature is below 60° F. and relative humidity is high, an hour or more drying time should be allowed.

This primer has some chromate pigment in it as well as a phosphoric acid solution, all of which react with the iron or steel surface to produce a rust-inhibited, chemically treated and dried surface to which "A" Series Prufcoat top coats form an exceptionally strong bond.

Primer P-10 reacts with the metal to dry excessive moisture, inhibit further rusting and furnish a chemically treated surface to which "A" Series Prufcoat can obtain a long-lasting and secure bond.

"A" Series Prufcoat is a liquid plastic formulation which resembles paint only in ease of application. It air-dries to form a tough, corrosion-proof plastic coating, firmly bonded to metal surfaces previously treated with Primer P-10.

When applied in the recommended number of coats for the exposure conditions to be encountered (three coats for protection against chemical fumes and occasional drips or spills of corrosive chemicals) this finish provides a long-lasting coating that is proof against the corrosive action of acids, alkalies, alcohol, oil, salt and water.

These materials are products of Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass.

Plastic-Covered Metal Tubing

Samuel Moore & Co., Mantua, Ohio, manufacturer of Dekoron plastic armored metal tubing, announces a new service for plants using instrument tubing or fluid transmission lines subject to moisture or corrosive atmospheres. *The company now offers to extrude a coating of vinyl or polyethylene over customers' tubing by the patented Dekoron process.* Tubing will be coated, before installation, in the company's Mantua, Ohio, plant.

BARRETT "FILWHIRL" ENAMELERS make easy work of many difficult coating problems

The Barrett Centrifugal Enameler

The Barrett "Filwhirl" Centrifugal Enameler provides a sure, clean and economical method of applying materials to parts or products that can be rotated. It saves coating material, time and expense. It is designed for bulk handling, and speedy production requirements.

It has proven highly successful in coating helical springs, clips, clasps, zipper parts, bead and link chain, toys, automobile and luggage hardware, misc. metal stampings, castings, etc. Excellent results are also obtained with japan, lacquers, varnishes, paints, waxes. No drips or fatty edges.

Furnished in spindle post, fixed bowl, and carrier types, in several capacities. Safety features included and auxiliary equipment is available.

Send a few representative samples to be processed and submitted for your examination.

THE LEON J. BARRETT COMPANY
Designers and Builders of Centrifugal Machinery
1703 GRAFTON ROAD WORCESTER 1, MASS.

Numerous merits are claimed for Dekoron tubing. The thick plastic armor sheath, which can be extruded over steel, copper or aluminum, is chip-proof and renders the metal tube virtually impervious to moisture, salt air, acids and alkalis, or corrosive industrial atmospheres.

Cleans Laboratory Equipment

Alconox, Inc., 61-63 Cornelison Ave., Jersey City, N. J., has introduced an improved wetting agent and detergent which is said to be particularly useful in cleaning equipment of the type found in industrial research laboratories. It contains no soap of any kind, yet it will produce abundant lather in water of any degree of hardness—without forming an insoluble calcium film. One tablespoon of Alconox dissolved in a gallon of warm water is ample for general cleaning purposes.

Concrete Floor Paint

Unskilled and inexpensive "acid proofing" of concrete floors, for many corrosive services, is now possible with the use of a brush-on phenol formaldehyde coating that hardens at room temperature.

Durometer readings are 85 to 90, compared with steel at 100. One primer coat and two finish coats are estimated to last two to three years on steps and other surfaces where considerable walking (but no trucking) takes place.

It resists orgainc and inorganic acids, except nitric acid. It is not recommended for alkalis, but se far no solvent has been found to dissolve it. Colors are brick red, chrome green, iron yellow, gray and black. The material is called Phenoline. It is a product of Carboline Co., 7603 Forsyth Blvd., St. Louis 5, Mo.

Industrial FINISHING Editorial

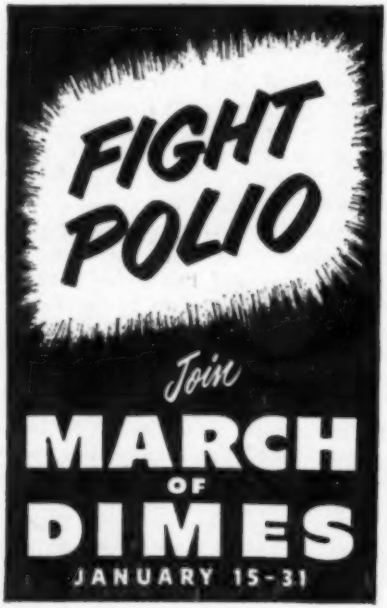
Use Materials, Power, Men and Time Wisely

Waste in industry must be drastically reduced, T. G. Graham, vice president of The B. F. Goodrich Co., told members of the Western Reserve Association of Foremen's clubs recently. Mr. Graham described industrial waste as an annual multi-billion dollar problem and called on all who work in industry to help solve it in the interest of national security.

In discussing the influence of waste on job security, Graham said that waste increases manufacturing costs, limits the producer's ability to meet the needs of his customers, handicaps the business to such a degree that future job security is endangered.

Graham singled out the rubber industry as an example of a business in which waste is a specially important factor, due to the nature of its operations. He credited the industry with overcoming many influences toward waste by the efficient use of accident prevention programs, suggestion systems and good industrial housekeeping practices.

The B. F. Goodrich production chief said that sound safety programs reduce accident and help prevent the waste of human resources; that practical suggestion systems reduce waste by pointing the way to more efficient methods; that good housekeeping practices help prevent waste caused by fire, accident, improper building maintenance, poor layout and inefficient storage of materials and supplies.



Paint, Varnish, Lacquer Association

A national association to speak and act for the paint industry was created in 1888. That industry was further unified through various mergers until 1933 when the present National Paint, Varnish & Lacquer Association was formed at Chicago. In 1940 the Association moved into its spacious Washington, D. C. quarters and has continued to expand its departments and its personnel. Its 60 years of performance in the trade association field is recorded in a compact edition

KIRKER
WOOD FINISHES

The complete line for all operations

SEALERS — Thoroughly seal wood, with full foundation to hold out lacquer. Will not "cloud" stain and filler. Excellent sanding properties.

RUBBING LACQUERS — Level out smoothly with full depth of finish. Will dull-rub or take mirror-like polish.

WATER WHITE LACQUER — Ensures maximum color retention on pale and bleached woods, blonde, silver gray, and similar modern furniture effects. Rubs and polishes.

Available in gloss, semi-gloss, satin, and dead flat.

Kirker wood finishes offer maximum flexibility to resist marring, alcohol, and cold checks; and uniform high quality for lasting furniture beauty.

KIRCO MODERN COATINGS

Kirker CHEMICAL COMPANY

ONE EAST ELEVENTH STREET • PATERSON 4, NEW JERSEY

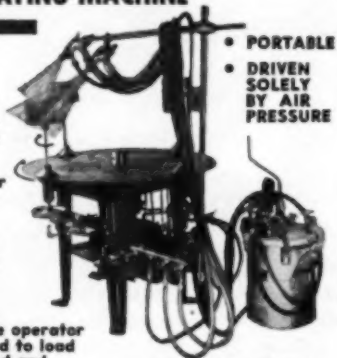
NITRO-STAN
Wood Finishes

Stains
Fillers
Sealers
Enamels
Undercoats
Topcoat Finishes

Color Cards on Request.
Inquiries Invited.

Standard Coating Corp.
455 Broad Avenue
RIDGEFIELD, N. J.

HOLLAND
automatic-pneumatic.
SPRAYING MACHINE



- PORTABLE
- DRIVEN SOLELY BY AIR PRESSURE

Production up to 1000 pieces per hour

Uses regular exhaust booth

Only one operator is needed to load unfinished and remove finished work.

Write for FREE folder "S"

J. HOLLAND & SONS, INC.
MANUFACTURERS — DEALERS
276 SOUTH NINTH ST. - BROOKLYN N Y

of its 1950 Year Book. Membership in the N.P.V. & L.A. includes more than 1200 individual manufacturers and wholesalers of the industry's products, and local affiliate associations in 23 states and the District of Columbia.

The magnificent headquarters of the Association at 1500 Rhode Island Avenue, N.W., in Washington, D.C., houses the activities of eight major divisions, 32 committees, and one bureau.

Here are a few examples of the education responsibilities attached to the various units. The Scientific Division, which is the most recently organized, conducts research for technical advancement; the Statistical Division disseminates economic data; the Trade Mark Division renders consultant services; while the Trade Sales Division keeps active contact with salesmen, distributors, dealers and contractors for sales promotion and sales education.

The National Paint Up, Clean Up, Fix Up Bureau guides nearly 3000 cities and towns that participate in a civic development program used as a model for foreign lands. This project is carried out for the welfare of the entire community and not for the benefit of any special interest. Actually the belief is that "Better living stimulates every type of business enterprise".

The Association is also conducting, through the advertising pages of several magazines, including this one, an excellent educational campaign which calls everyone's attention to the value of quality finishes on all products that people see or buy or use. Finishes are used to impart to various products decorative effects, identification characteristics, protective values and lasting durability. These values are all summed up quite effectively in the Association's slogan, "The Better the Finish the Better the Buy".

SAVE COSTLY SCRAPE DOWNS

Using expensive labor to scrape down spray-booths costs a lot more than peeling off accumulated overspray in big sheets. Safer, too.

Order a 5 gallon Test-Sample at Drum Lot price.

LIQUID ENVELOPE
PEELABLE
SPRAY-BOOTH COATING

DISTRIBUTED BY

General Spray Equipment Co., Boston, Mass. • Bay State Equipment Co., Springfield, Mass. • Lea Manufacturing Co., Waterbury, Conn. • Edgcomb Steel of New England, Milford, Conn. • Kellerman Paint Co., New York, N. Y. Grupek Paint Co., Newark, N. J. • Pennsylvania Lacquer Center, Philadelphia, Pa., • R. W. Renton Co., Cleveland, Ohio, Indianapolis, Ind. • Dean & Barry Co., Columbus, Ohio • Vic Miner Co., Toledo, Ohio • Abrasive & Supply Co., Detroit, Mich. • Nelson Industrial Supply Corp., Grand Rapids, Mich. • O'Donohue Sales Co., Milwaukee, Wis. • Paints & Lacquers Inc., Chicago, Ill. • Tanner & Co., Indianapolis, Ind. • Metal Goods Corp., St. Louis, Mo., North Kansas City, Mo., Dallas, Texas, New Orleans, La. • Hubbard & Stau, Los Angeles, Calif • M. E. Smith Co., Los Angeles, Calif. • C & H Supply Co., Seattle, Wash. • Hugh Russel & Sons Ltd., Montreal & Toronto, Canada.

BETTER FINISHES AND COATINGS, INC.
268 Doremus Ave., Newark 5, N. J. • 122 East 7th St., Los Angeles 14, Calif.

Fluorescent Colors; Bronze Powders

Advertisers as well as sales promotion men will welcome the news that bronzing powders have been developed so that daylight fluorescent colors may be used in printing and lithography as well as for silk screen processing. Proof of success is found in the recent production of 100,000 posters 26x65-in. by a Chicago firm in both daylight fluorescent and non-fluorescent colors for a food company.

It will open the way for the use of fluorescent colors for long runs of point of sales displays, magazine inserts, labels, catalogues and direct mail pieces.

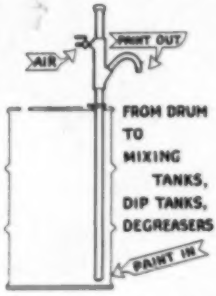
Developers of the bronzing powders suggest that for the present these colors be used on displays not required to stand more than seven days exposure to direct outdoor sunlight, or 14 days direct sunlight through a glass window. Fluorescent colors used in silk-screen processing will withstand 30 days exposure to outdoor sunlight. Of course, when used for magazine inserts, catalogue pages, etc., colors will have a much greater life expectancy due to intermittent short exposure to light.

TOMORROW'S Products Tested TODAY

A service to aid industry in producing longer-lasting and better-looking products. Quick predetermination of durability and permanency by actual exposure test in South Florida. Write us today for full information.

SOUTH FLORIDA TEST SERVICE
EST. 1931
4201 N. W. 7th St. Miami 34, Fla.

New Improved Air-Operated TRANSFER PUMP That Works



Most any fluid material of a non-abrasive, non-acid, non-alkaline solution can be transferred.

Transfers Drum of Paint in 5 Minutes—
Lighter Fluids Even Faster

USE FOR TRANSFER OF:
- Paints
- Thinners
- Solvents
- Oils
- Various Adhesives
- Non-Corrosive Chemicals
- Lacquers
- Alcohols
- Naphtha
- Lubricants

Low Cost—Only $62.00
F. O. B. Chicago
Extra Charge for Hoses

Simple design, light construction (weight only 15 lbs.). For all drums with 2-in. openings.

Wilkinson
EQUIPMENT & SUPPLY CORP.
6958 SOUTH WENTWORTH AVENUE CHICAGO 21, ILLINOIS

"Fireproof" Buildings Not Always Safe

What does fire-resistive construction not do? It does not prevent fires; this is more often accomplished by a fire prevention program for employees. It does not detect fires; this is accomplished by trained watchmen, alert employees, and automatic detection equipment. It does not guarantee the safe evacuation of occupants; this is accomplished by adequate exits for safe escape from any part of the building. It does not limit fire spread; . . . accomplished by fire divisions and fire partitions with all openings protected. It does not prevent vertical spread of fire; . . . accomplished by enclosure of stairways, elevator shafts and other vertical openings. It does not prevent explosion damage; . . . accomplished by facilities for explosion venting. It does not prevent exposure from fire from involving the contents of a fire-resistive buildiing; . . . accomplished by fire doors, shutters, outside sprinklers, wired-glass windows and removal of serious exposure hazards. And fire-resistive construction does not extinguish fires; this is accomplished by automatic sprinklers, fire extinguishers, special fire extinguishing equipment and private and public fire departments.

The foregoing statements are quoted from a 50-cent pamphlet published by National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass. It emphasizes that while fire-resistive construction is desirable and of real value in every respect, including its safety features with respect to fire, there is a too common false belief among people that "fireproof" buildings are immune to serious fires.

As a matter of record, during the past ten years, 764 lives were lost

and $25,000,000 property damage was caused in 32 fires in fire-resistive buildings. Of the 764 fatalities, 35 occurred in manufacturing plants, 22 in warehouses, 32 in office buildings, 180 in hotels, three in a hanger and 492 in a night club.

In the pamphlet, extensive use of pictures has been made of fires and explosions occurring since 1940 in fire-resistive buildings, with factors responsible for the extensive damage indicated in the captions.

"Perk Up" Bulletin Board

★ A bulletin board in the finishing department has wonderful possibilities but you must keep your workers interested. These quick hints will help:

1) Encourage the men to bring in suitable material. Give credit for such contributions, whether clipped material, original ideas, or pictures.

2) When you must select between something from the men themselves and your own material, give theirs the preference. It will receive more attention, and in a bulletin board that is what counts.

3) Use occasional cartoons or other humor to "perk up" the bulletin board. If it fits in with present problems or conditions in the finishing department, so much the better. But don't hesitate to utilize the appeal of a good laugh.

4) If a short piece of industrial news has interest for the workers, it should be placed on the bulletin board. Often it will be wise to indicate where the men can find additional information on the subject. Among those who

---

★ *Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those used.*

Spe-de-way

WOOD BLEACH

This single operation, controllable, Patented Bleach

- **Requires No Neutralization**
- **Does Not Raise the Grain**
- **Leaves No Deposit**
- **Wood Is Left Neutral**
- **Economical . . . Dependable**

Gallon Unit makes two gallons of bleaching solution. Application by spray or synthetic rubber sponge. Wood is ready for finishing in less than two hours.

** Delivered prices quoted on request.*

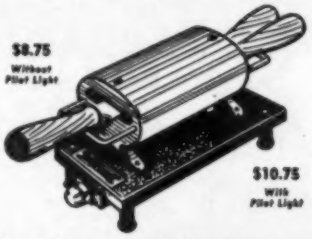
Spe-de-way **Products Co.**

manufacturers

3639 N. Columbia Blvd., Portland, Ore.

No String Tied To This—

If You Use OP-AL



Patching Knife Heater

STANDARD FOR OVER 25 YEARS

Sold By All Leading Jobbers

THE OP-AL ELECTRIC AND MANUFACTURING COMPANY

809 N. SENATE AVE. - INDIANAPOLIS 7, IND.
Phone: Lincoln 0250

"Wood Graining"

ADDS

Eye Appeal

American Graining Plates are photographic reproductions of fine woods.

AMERICAN RICHWOOD PRODUCTS CO.

Graining Plate Division

104 E. Mason St., Milwaukee 2, Wis.

RESTORE PAINT IN 2 MINUTES

PER GALLON WITH

MIRACLE BLUE - BOY

5 GALLON

PAINT REJUVENATOR

Paints, lacquers and enamel products can be restored to their original consistency without opening the can. Units available to handle from ¼ pint to 50 gallon drums. Immediate delivery.

Originators of paint rejuvenating equipment---sixteen years—thousands of satisfied users.

Write for folder & prices

MIRACLE PAINT REJUVENATOR CO.
128 E. 10th Street St. Paul 1, Minn.

show an eagerness to learn, the finishing department may discover its foremen of tomorrow.

5) Occasional contests for interesting items will have everyone watching the bulletin board. Be sure to specify whether material must be original or clipped. Arrange for several small prizes and plenty of recognition for the winners.

6) Better to have the bulletin board half covered with bright, sparkling items than full of dull material no one will read!—*G.M.D.*

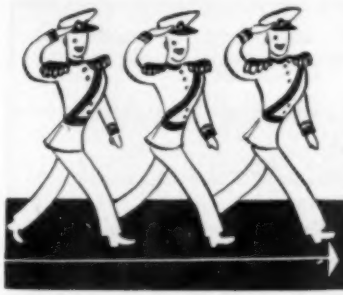
Color and Form

★ Are you color dominant or form dominant? In other words, when you go out to buy things—automobiles, wall paper, furniture—are you influenced chiefly by their colors or by their shapes? Such questions as these have been interestingly answered by the Color Research Laboratory of the Sun Chemical Corp., 10th St. & 44th Ave., Long Island City 1, N.Y.

Psychologists definitely know that small children, up to school age, are more impressed by color than they are by form. To adults, on the other hand, shapes, designs and patterns assume major significance.

A small child when asked to match a red circle against an assortment of green circles and red triangles will not hesitate to put the same colors together, regardless of form. To adults however, the above problem would be considered ambiguous. The chances are that the circles would be separated from the triangles, regardless of color.

It seems that color in its appeal and influence is a more primitive element than form. Surely in printing and advertising design, nothing "catches" the eye like a brilliant hue. Color attracts in an impulsive way; form is a more debatable thing and needs a bit of training and appreciation to enjoy.—*H.B.S.*



Uniform texture . . . .
and superior quality
ensured by our
wrinkle finishes
under any baking condition.
For your best wrinkle finishes in 28 colors write to
NATIONAL LACQUER & PAINT CO., INC.
7415 S. GREEN ST. • CHICAGO 21, ILL.

More Information . . . Where and When Needed

★ There was a time when skilled craftsmen guarded their trade secrets jealously, and by virtue of this secret knowledge, could demand important jobs in industry. This old situation has reversed itself completely. Today the generally higher level of education enjoyed by industrial workers, plus wide dissemination of technical knowledge in a manner to make it available to all, has literally banished "trade secrets" as a qualification for industrial personnel.

The mark of a competent supervisor or foreman is his ability to pass his knowledge on to those under him —doing it in a manner to make them more appreciative of their jobs. When a workman realizes that his job is more than just a repetition of mechanical acts, when he appreciates the fact that his work is a vital link in the chain of technological sciences that lead to the finished product, he is bound to regard his services in a new and more important light.

This dissemination of knowledge places additional responsibility on the supervisor or foreman. First, he must devise some method of imparting the information to the employee in the least distasteful manner. Information can be revealed during casual conversation, or by suggestions. A small departmental library, with books and magazines covering the work being done, should be maintained; and sincere employees should be invited to consult this data whenever they feel the urge.

Some companies go so far as to conduct departmental "seminars" or discussion groups, held on company time, during which work of the department is reviewed and ways of improving it are discussed.

Secondly, the supervisor who wishes to pass on information must keep

IDEAL TACK RAGS
FOR A PERFECT FINISH
Immediate Delivery
IDEAL CHEMICAL COMPANY
1689 Lee Road Cleveland 18, Ohio

Serving THE SOUTHEAST
• LACQUERS • GLAZES
• SEALERS • PIGMENTED WIPING STAINS
• FILLERS • TONERS • NGR STAINS
Complete Technical Service At Your Disposal
SNYDER BROTHERS COMPANY
Manufacturers of Quality INDUSTRIAL LACQUERS
P. O. BOX 548 — TOCCOA, GEORGIA

INFRA-RED OVENS
(Lamped or Lampless)
Individually engineered in stationary, conveyorized, portable or special designs
Manufactured by
THE MISKELLA Infra-Red COMPANY
Main office: 7305 Grand Ave., Cleveland 4, Ohio

FOR ALL FINE FINISHES
TAC-ALL TACK RAGS
Packed bulk or individually.
Prices and samples on request.
GEO. W. RENNER CO.
2309 Lillie St., Ft. Wayne 5, Ind.

ALUMINUM PANELS
for testing aircraft finishes now available.
GARDNER LABORATORY
Bethesda 14, Md.

his own store constantly replenished. This means keeping up on new developments in the field, on new processes, and on improvements of old processes. It means reading, research, and attendance at technical society meetings. No supervisor can rest secure on the knowledge he already possesses. Let him hand out one bit of hackneyed advice, or recommend an out-dated procedure, and some wide-awake employee will catch him up before he can retract the words.

This absorbing and passing on of new knowledge and information is an important phase of modern industrial management. It is a pipeline through which progressiveness and efficiency can be pumped into any organization. —*G. C. Close.*

Triples Fluorescent Tube Life

An invention that contributes to tripling the life of fluorescent tubes is described in United States patent No. 2,530,394, granted in November 1950 to three well-known engineers of Sylvania Electric Products Inc.

Applied to its own product for the last three years, the new process is an important factor in enabling Sylvania Electric to raise the rated life of its fluorescent tubes from 2500 hours to 7500 hours.

Ferro's New Finishes Sales Mgr.

The Liquid Plastics Division of Ferro Enamel Corp., 4150 E. 56th St., Cleveland 5, Ohio, manufacturer of Vedoc organic finishes, announces the appointment of Michael M. Carmody as Central Sales Manager. In this capacity, Mr. Carmody will have charge of Vedoc industrial finishes in the Southern half of Indiana, Ohio and all of Kentucky.

Since 1922, Mr. Carmody has been associated with the manufacturing and selling of industrial and trade sales paints, varnishes and lacquers. He was formerly with concerns in Cincinnati and Dayton, Ohio.

Look Around . . . you'll find

NEW PERIOD FINISHES EVERYWHERE

Yes — wherever you find high quality . . . superior coverage . . . lower costs . . . you'll find New Period Production Finishes. Each year more and more manufacturers turn to this complete line.

- Fillers and Stains
- Lacquers—Clear and Semi-Gloss
- Sealers
- Lacquer Enamels—Flat and Gloss
- Synthetic Enamels

Write for 5 Gallon Working Sample at Drum Price

MANUFACTURERS OF FINE WOOD AND METAL PRODUCTION FINISHES

NEW PERIOD Production Finishes

ESTABLISHED 1917

NEW YORK WOODFINISHERS' Supply Co. INC.

109 IMLAY STREET BROOKLYN, N. Y.

B. M. Schneiderman in N. Y. for Baltimore Paint & Color Works

Baltimore Paint & Color Works, Baltimore 23, Md., announces that Mr. Barnet M. Schneiderman, well known in the New York industrial area, has joined the company and will be its industrial representative in the New York area.

National Packaging Exposition to Be Held April 17-20

The American Management Association will sponsor its 20th National Packaging Exposition April 17-20 at the Auditorium in Atlantic City. Machines, equipment and services used in packaging, packing and shipping will be on display, and it is expected that the show will be larger than ever before, in both area occupied and number of exhibitors.

The Story of Duco, Free

The ful. history of the creation and development of "Duco" finishes is told for the first time in a 20-page illustrated booklet just released by the Du Pont Company. Page size, 9x12-in., yelow, black and white covers.

Called "This is Du Pont—The Story of 'Duco' Finishes", it is a picture story of the discovery and development of modern finishes and the far-reaching effect on industry and American living today.

By photos and text it documents the solving of the difficult problem of providing quick-drying, durable finishes; of taking the paint business out of its folklore methods and getting it on a scientific basis. The skeptics said it could not be done, probably because nobody had put the necessary time, knowledge, and money into it.

As late as the early 1920's, paint and patience still went hand in hand. Auto production lines creaked because it took up to 25 days to paint a car. The furniture business was in the same position.

The problem was there and Du Pont's interest, then as now, centered upon those businesses in which it could make a substantial technical contribution for a mass market. The booklet notes, "The paint industry as it then existed proved irresistible."

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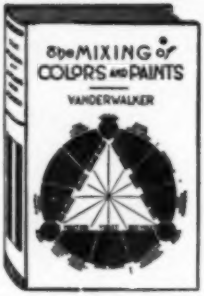

COLOR formulas and Useful Color Cards. Description, Properties, Theory, Harmony and Management of Colors. Furniture and Polychrome Finishing. Color and Light; Description of Color Pigments; Properties of Color Pigments; How Colors Are Prepared for the Trade; Basic Paint Pigments; Painting Oils; Volatile Thinners and Dryers; General Paint Mixing Methods; Color Theory, Principles and Use; Colored Paint Mixing, Methods; Mixing Special Purpose Materials; Color Harmony and Management; Selecting Color Schemes.

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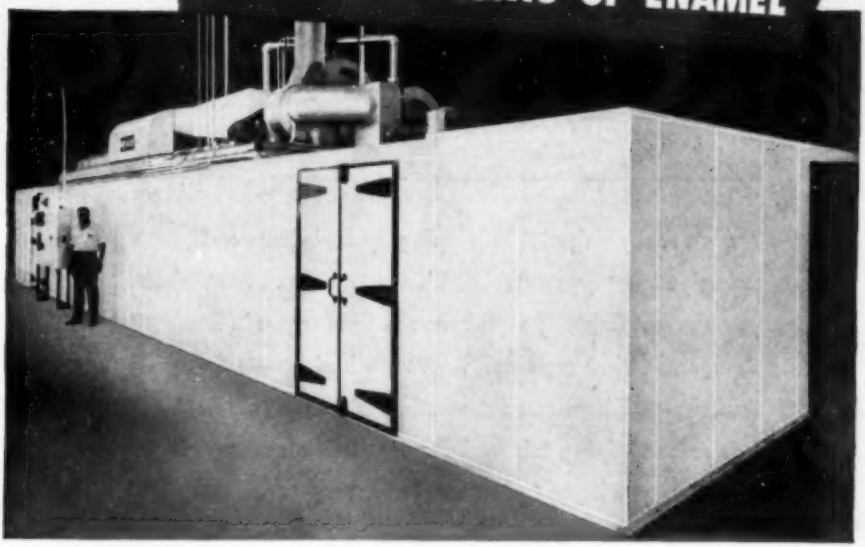

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